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ACCOMPLISHMENT PLAN. REGION VIII. NORTHERN GREAT PLAINS RESOURCE PROGRAM

ENVIRONMENTAL PROTECTION AGENCY

JULY 1973

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ACCOMPLISHMENT PLAN

REGION VIII

U. S. Environmental Protection Agency

Covering:

EPA Participation in the
Northern Great Plains Resource Program
(Montana, North Dakota, South Dakota, Wyoming, Nebraska)

JULY 1973

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ABSTRACT

This Accomplishment Plan presents the allocation of EPA resources to carry out its responsibilities in light of low-sulphur coal mining and power-generation in the Northern Great Plains area of Montana, the Dakotas, and Wyoming. Emphasis is on regionally (Region VIII) coordinated effort, though Headquarters' participation is addressed.

The vehicle for accomplishing our goals, the Northern Great Plains Resource Program, is presented and the Plan follows the outline of the Program. The Program is cosponsored by EPA, Interior, Agriculture, and Commerce, with public, State, and local participation, and coordinated under the mechanism of the Rocky Plains Federal Regional Council. The Program is designed to procure and develop the necessary data to insure proper development of resources where the words "proper development" can mean "no development" under certain circumstances. EPA participation will be critical to the Program.

"The coal appears to be of better quality; I expose a specimen of it to fire & found it burnt tolerably well, it afforded but little flame or smoke, but produced a hot & lasting fire...."

April 22, 1805 entry by
Capt. Meriwether Lewis in
the "Journals of Lewis and Clark"

'Strip mining in Montana could produce a 30 percent increase in the State's population'.....'If this estimate proves itself to be accurate, quality environment will assuredly decline and along with it the frontier attitude. It would be replaced with a possible and a temporary increase in living standards, an increase in crime, urban sprawl, pollution, and other urban problems."

Michael Olsen and Daniel Henning
Eastern Montana College
as quoted in The New York Times 2 Apr 73

"Energy conservation can make a substantial contribution in ameliorating or postponing the potential energy shortages faced by the United States over the next several decades. To realize this contribution, however, will require not only the political will to implement the necessary conservation measures but also the imagination and intellectual resources of the scientific community to develop new technologies to increase the efficiency of energy uses."

G.A. Lincoln, "Energy Conservation"
SCIENCE, V180, 155-162, 13 Apr 73

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I. Introduction

Recent national fuel shortages have once again focused attention on the supply and demand problems associated with a national "energy crisis." In fact, this "energy crisis" may more appropriately be termed the "energy dilemma" since various choices exist when estimating both energy demand and means of supplying the demand. The dilemma involves both national and international considerations; both social and technological considerations. Pressure to develop domestic energy resources in order to lessen the country's dependence on foreign imports, along with concern over environmental impacts of energy production, has helped identify a more complete inventory, or at least a need to procure a complete inventory, of national sources of energy. The President's recent energy message encouraged the use of domestic coal to meet the needs for energy. 1) The North Central United States, particularly the six States of Montana, Wyoming, Colorado, Utah and North and South Dakota, which comprise the geographical area of Region VIII of the EPA, will play a significant role in meeting the nation's demand for energy. Region VIII member states have vast reserves of low sulfur coal, oil shale, uranium and natural gas in "tight" formations, all of which can be used to alleviate fuel shortages (Table 1). In addition, this six-state area possesses relatively unquantified geothermal reserves, an unknown potential to collect solar energy, crude oil and gas reserves, and hydroelectric power potential.

---

1) New York Times, 19 April 1973, "President Offers Policy to Avert An Energy Crisis"

The present state of development in this geographical area is limited, but there exists the following potential for enormous growth:

Coal

Coal production in 1973 for Montana[2] and Wyoming[3] is predicted to be 16 and 15 million tons, respectively. Annual production is expected to increase in Montana to 80 million tons by 1980, and in Wyoming to 40 million tons by 1979. Significantly higher figures are possible if the demand for low sulfur fuels continues to grow. The States of Montana, Wyoming, and the Dakotas, chosen to be the study area of the Northern Great Plains Resource Program (NGPRP), encompass most of the Fort Union Formation (Figures 1 and 2) and perhaps the largest coal basin in the world, containing 40 percent of the United States reserves. Most of the economically strippable coal in this formation is located in Montana and Wyoming where estimates of these reserves are 30 and 24 billion tons, respectively (2,3), most of this being coal with low sulfur content.

.5 bil tons used nationally in 1972
54 bil. Tons = 100 year supply with increase in amount demanded.

---

[2] Coal Development in Eastern Montana: Report of the Montana Coal Task Force. January 1973

[3] Wyoming Geological Survey statistics

TABLE 1

ENERGY RESOURCE RESERVES IN REGION VIII, EPA

COAL:

50 BILLION TONS, ECONOMICALLY STRIPPABLE

COAL SEAM THICKNESS: 8-50 METERS

OVERBURDEN THICKNESS: 3-70 METERS

1971 U.S. COAL PRODUCTION: ½ BILLION TONS

OIL SHALE:

600 BILLION BBL CRUDE FROM HIGH GRADE SHALE

(3 METER SEAM; > 25 GAL/TON)

1200 BILLION BBL ADDITIONAL FROM LOWER GRADE SHALE

(3 METER SEAM; 15-20 GAL/TON)

1970 U.S. OIL CONSUMPTION: 5.5 BILLION BBL

GAS:

(TIGHT RESERVES)

600 TRILLION CUFT.

1970 U.S. PRODUCTION OF NATURAL GAS: 22.5 TRILLION CUFT.

URANIUM:

IN 1971 - 45% OF U.S. U_3O_8 FROM WYOMING, COLORADO, AND UTAH.

NOTE: 1×10^9 TONS $\approx$ 9×10^7 KILOGRAMS
1×10^9 BBLS $\cong$ 42×10^9 GAL $\approx$ 1.6×10^8 CUBIC METERS
1×10^{12} FT^3 $\approx$ 3×10^{10} CUBIC METERS

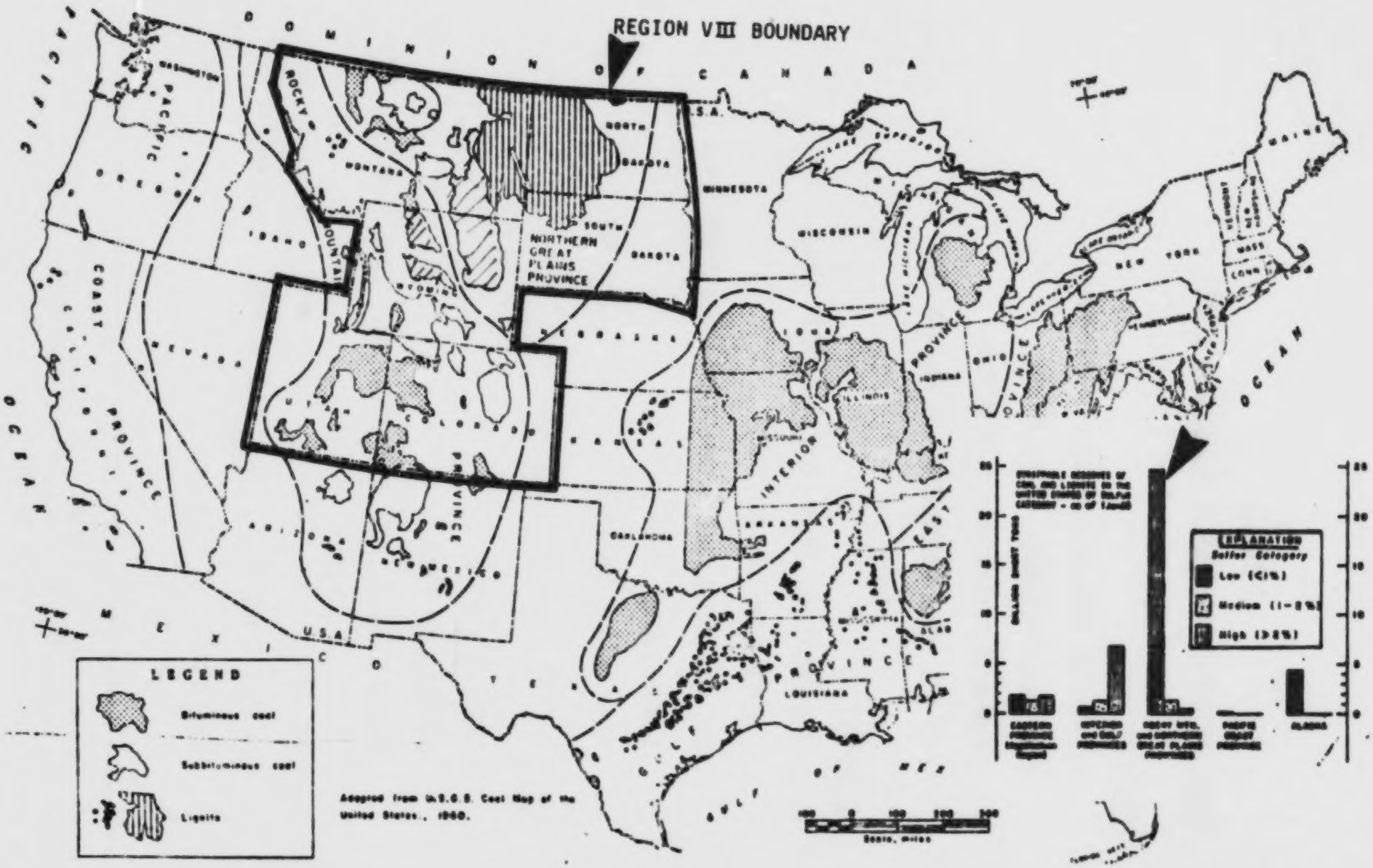
REGION VIII BOUNDARY
DOMINION OF CANADA
PACIFIC OCEAN
PACIFIC
COAST
PROVINCE
ROCKY MOUNTAIN
PROVINCE
NORTHERN GREAT PLAINS PROVINCE
NORTH DAKOTA
SOUTH DAKOTA
MONTANA
WYOMING
IDAHO
NEVADA
CALIFORNIA
OREGON
WASHINGTON
COLORADO
ARIZONA
NEW MEXICO
NEBRASKA
KANSAS
OKLAHOMA
MINNESOTA
WISCONSIN
MISSOURI
ILLINOIS
INDIANA
OHIO
NEW YORK
LOUISIANA
INTERIOR
PROVINCE
GULF PROVINCE
GULF OF MEXICO
TEXAS
MEXICO
U.S.A.
OCEAN
LEGEND
Bituminous coal
Subbituminous coal
Lignite
Adapted from U.S.G.S. Coal Map of the United States., 1960.
Scale, miles
100 0 100 200 300
EXPLANATION
Sulfur Category
Low (<1%)
Medium (1-3%)
High (>3%)
BILLION SHORT TONS
0
5
10
15
20
25
ALASKA

FIGURE 1 BITUMINOUS, SUBBITUMINOUS COAL, AND LIGNITE DEPOSITS OF THE CONTERMINOUS UNITED STATES AND COMPARISON, BY PROVINCE, OF STRIPPABLE RESERVES

after BuMines IC 8531, 1971

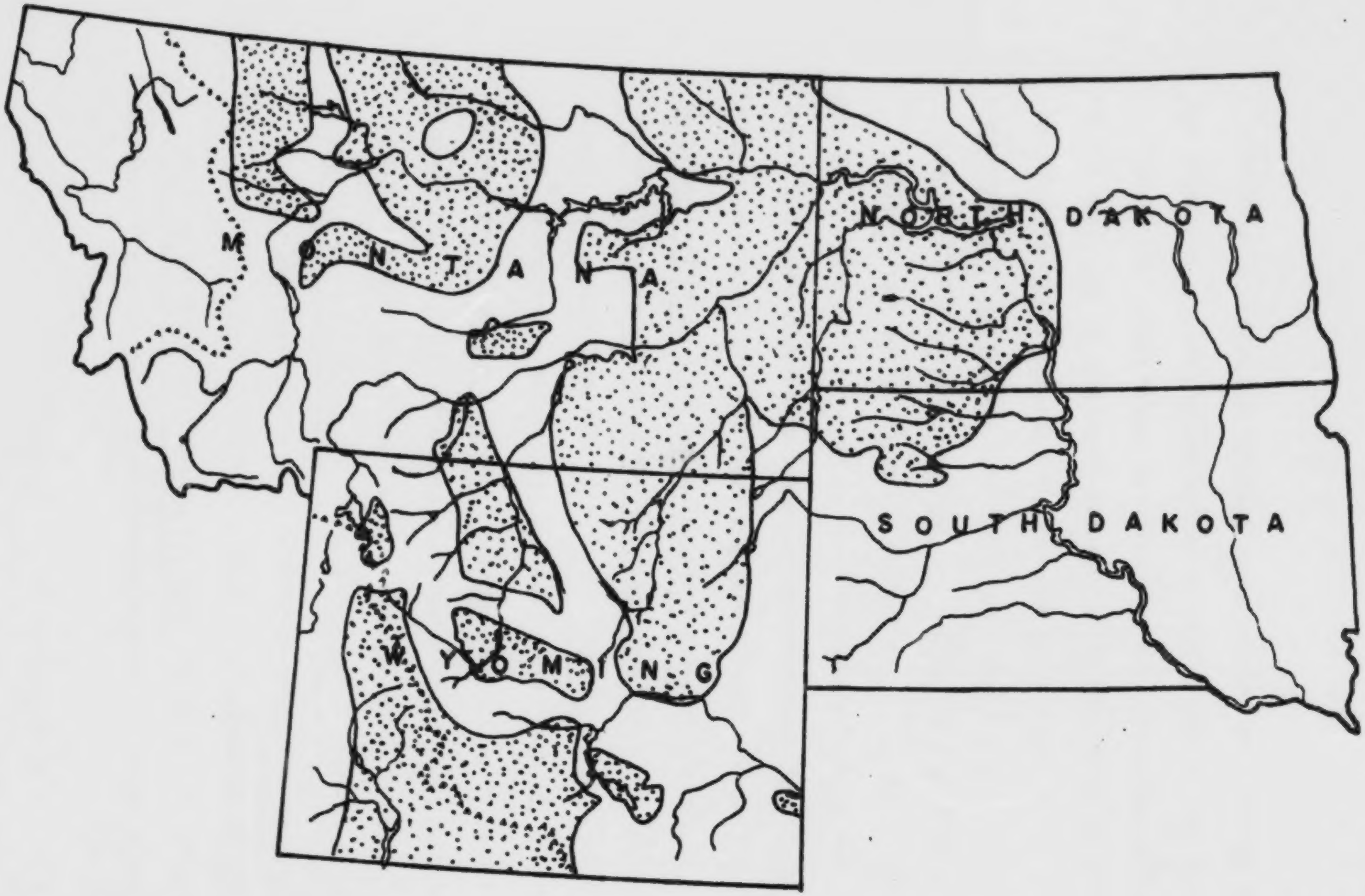
MONTANA
NORTH DAKOTA
SOUTH DAKOTA
WYOMING

FIGURE 2. FORT UNION COAL FORMATION IN THE NGPRP STUDY AREA - Total Area of Strippable Coal

In comparison, the United States produced approximately ½ billion tons of coal in 1972. Fort Union low sulfur coal, or synthetic gas made from this coal, may help meet the requirements for cleaner burning fuels in compliance with the intentions of the Clean Air Act.

A recent scenario of future growth possibilities was found in the *North Central Power Study* (1971) and the *Bureau of Reclamation Appraisal Report on Montana and Wyoming Aqueducts* (1972). These reports investigated the feasibility of diverting approximately one-third of the Yellowstone River to the coal rich areas of eastern Montana and northeastern Wyoming, where mine-mouth power plants would produce power for local industry as well as load centers hundreds of miles distant. Forty-two potential power plant sites were selected where coal and water resources were adequate for the generation of 200,000 megawatts of power (Figure 3). Presently operating power plants in the NGPRP study area are illustrated in Figure 4. With the exception of the Dave Johnson Plant (750 megawatts) in Wyoming, individual power plant outputs are generally less than 300 megawatts. Two indicators of energy supply growth are the new 1500 megawatt Jim Bridger Plant in Wyoming and the 700 megawatt Colstrip Plant in Montana, both under construction. Montana Power and Light has contracted Westinghouse to write a Montana Environmental Impact Report on increasing the capacity of the Colstrip Plant to 2100 megawatts, making it larger than the Four Corners Plant in Farmington,

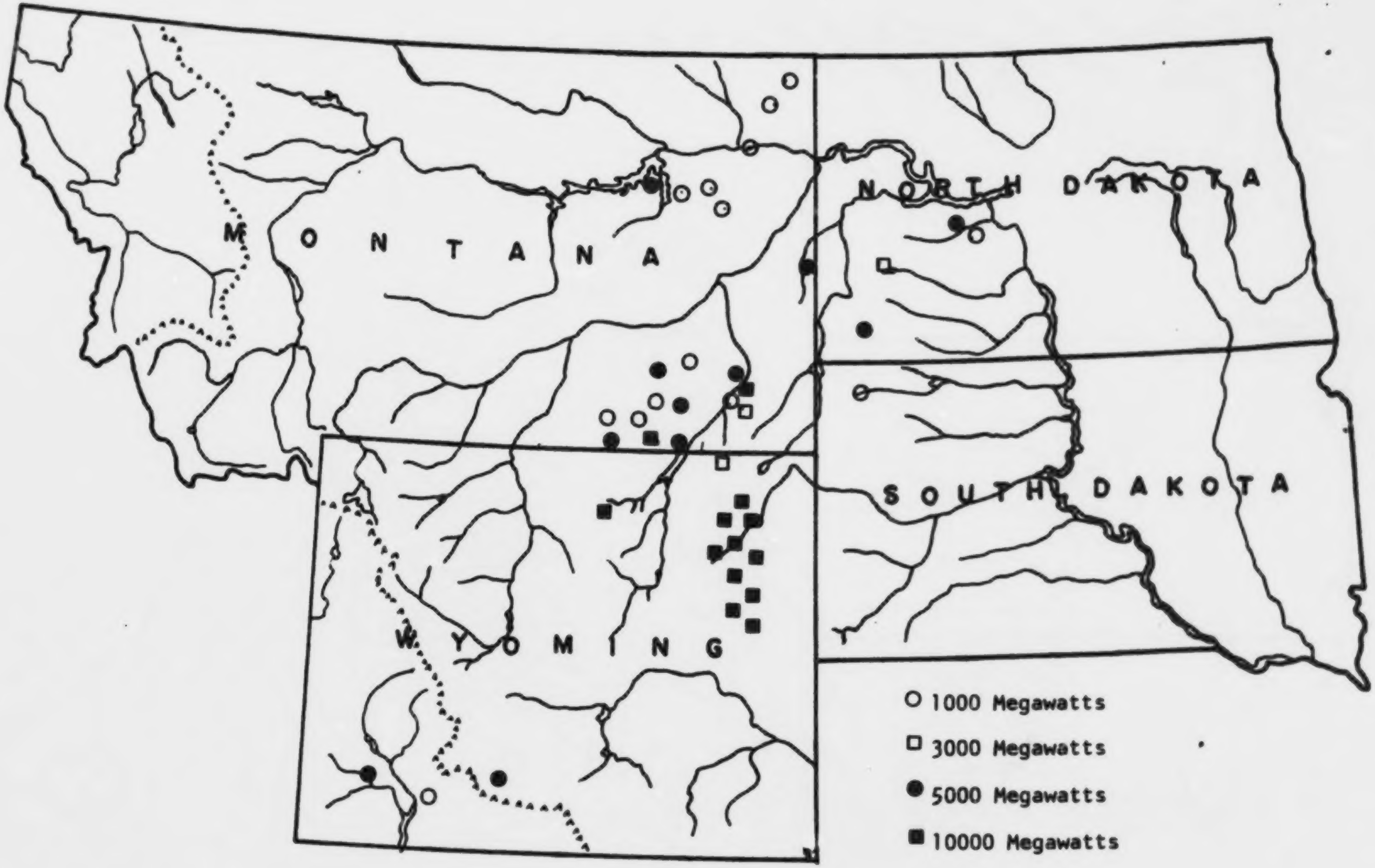
MONTANA
NORTH DAKOTA
SOUTH DAKOTA
WYOMING
○ 1000 Megawatts
□ 3000 Megawatts
● 5000 Megawatts
■ 10000 Megawatts

FIGURE 3. POWER GENERATION "POTENTIAL" OF NORTHERN GREAT PLAINS COAL DEPOSITS
after: North Central Power Study (7)

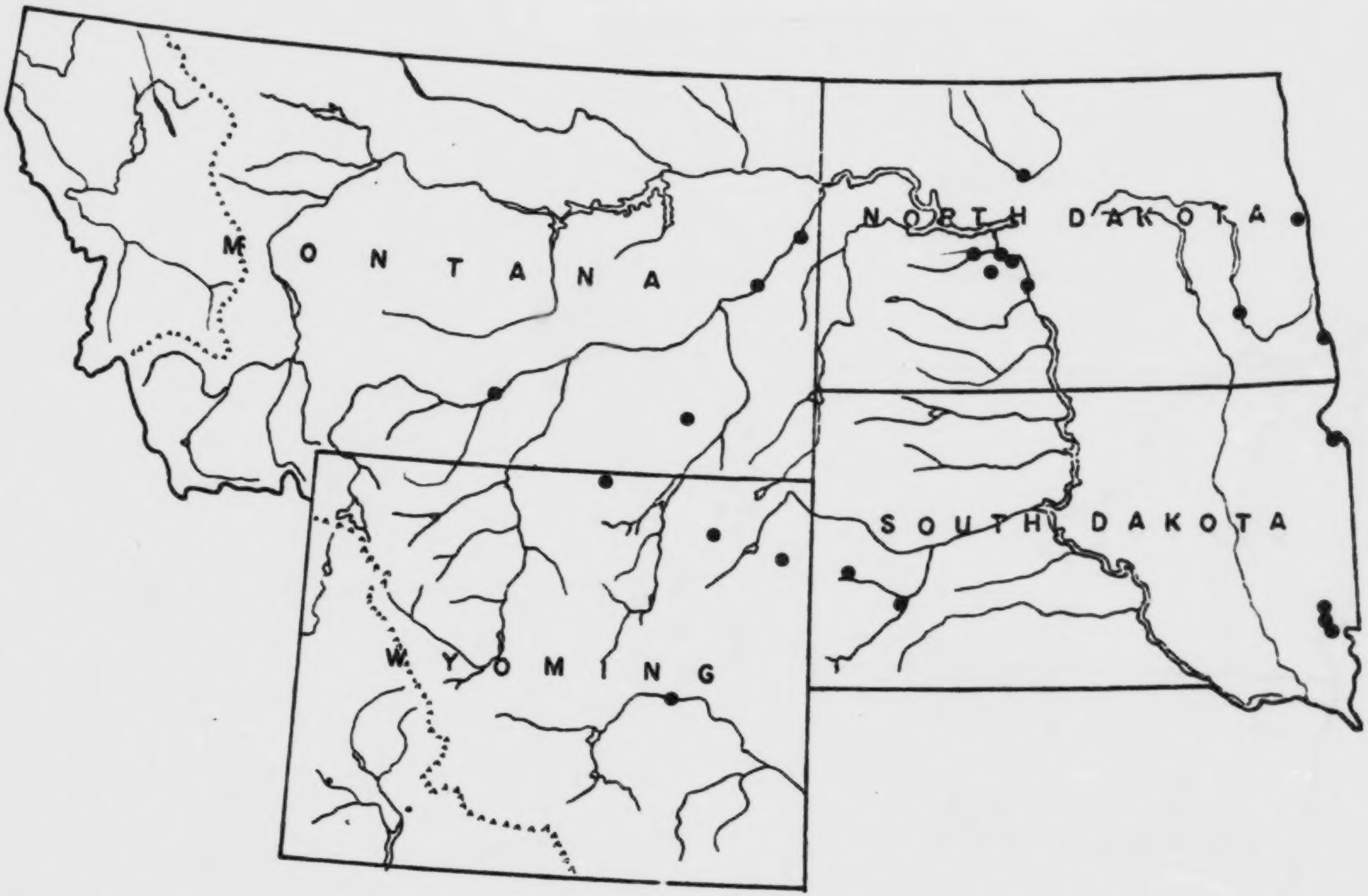
MONTANA
NORTH DAKOTA
SOUTH DAKOTA
WYOMING

FIGURE 4. POWER PLANTS OPERATING IN THE NGPRP STUDY AREA

New Mexico. Eight billion tons of coal and 900,000 acre feet of water could be required to reach a 50,000 megawatt capability from the Northern Great Plains area by the Year 2000. 4) A full scale development of this order might precipitate a seven fold increase in population to 500,000 in the affected areas of Montana and Wyoming. The environmental and social consequences of such development remain to be studied in adequate detail.

Oil Shale

The organic-rich sedimentary rocks of the Green River Formation of Colorado, Utah, and Wyoming offer the greatest promise for oil shale production in the immediate future. The known Green River Formation deposits include high grade shale (25 gallons of oil per ton of shale; greater than 10 foot thick seam) representing 600 billion barrels 5) of oil. An additional 1200 billion 5) barrels are estimated to reside in sequences of lower grade shale. Figure 5 illustrates oil shale deposits located in the NGPRP study area. By comparison, the nation consumed 5.5 billion bbl of crude in 1970. The Department of Interior recently published a draft EIS for the Proposed Prototype Oil Shale Leasing Program in the States of Colorado, Utah, and Wyoming. (It should be mentioned that the definition of what amount of oil shale is economically recoverable

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4) North Central Power Study (1971)

5) U.S. Department of Interior Draft Environmental Statement for the Proposed Prototype Oil Shale Leasing Program, Volume 1

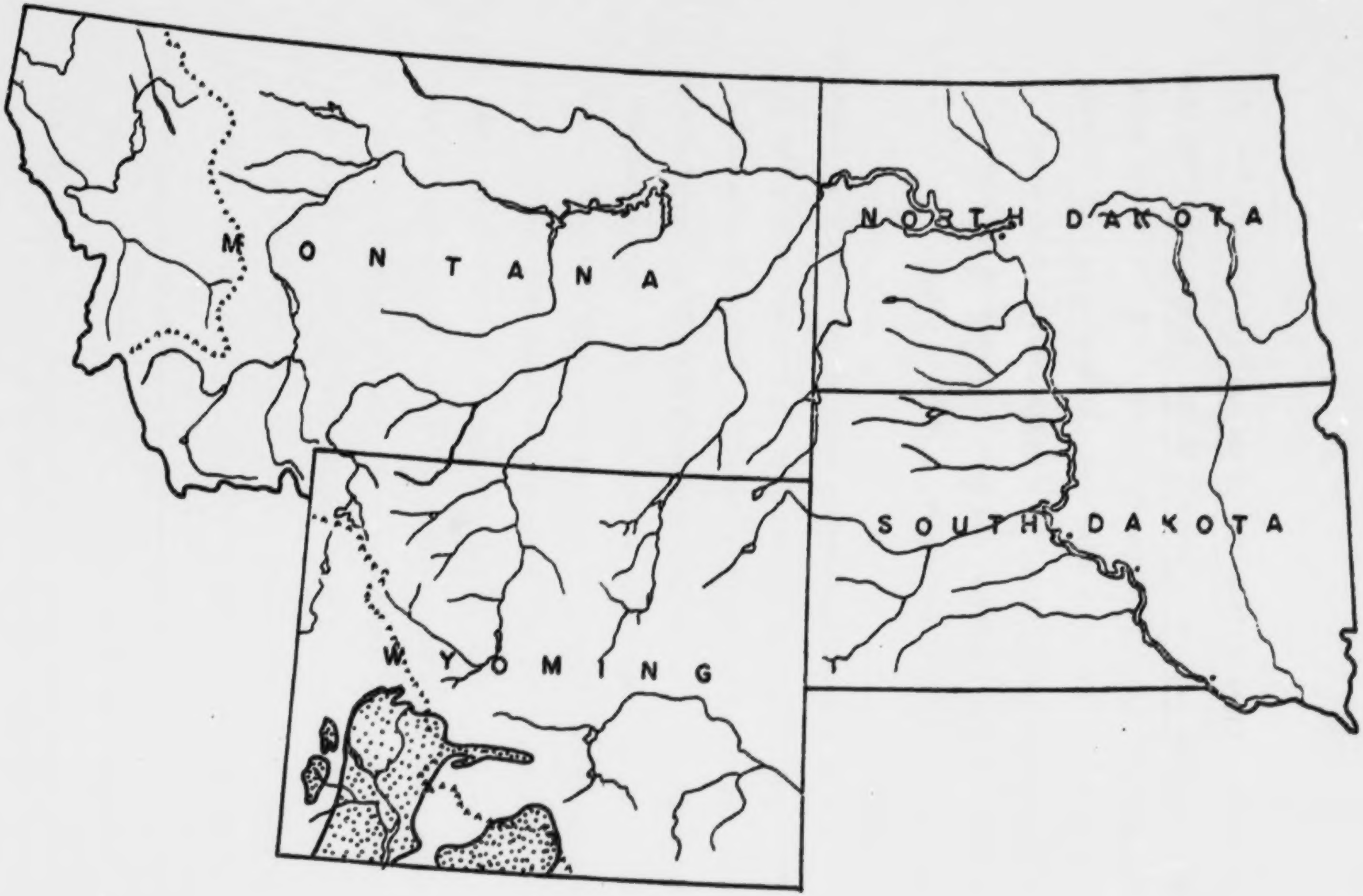
MONTANA
NORTH DAKOTA
SOUTH DAKOTA
WYOMING

FIGURE 5. OIL SHALE DEPOSITS IN NGPRP STUDY AREA

is subject to question since there is not now a commercial oil shale operation.)

Uranium

In 1971, 45 percent of the country's uranium ore was mined in Wyoming (28%), Colorado (10%), and Utah (7%). [6] Uranium mining areas in the study area are presented in Figure 6.

Tight Gas

Tight gas refers to natural gas trapped in rock formations of low porosity. Conventional fracturing techniques or the more controversial nuclear stimulation have been proposed to free these gas reserves. Recent estimates [7] of potentially recoverable trapped gas in promising areas of Wyoming, Colorado, and Utah amount to 600 trillion cubic feet. This is in contrast to the 1970 U.S. natural gas production of 23 trillion cubic feet and the 290 trillion cubic feet known U.S. deep well gas reserves.

The AEC plans a series of test detonations of nuclear devices designed to free tight gas in Colorado (Rio Blanco) and Wyoming (Project Wagonwheel). Two tests have already been performed in New Mexico (Project Gasbuggy) and Colorado (Project Ruleson).

Oil and Natural Gas (Conventional deep well sources)

The approximate geographical limits of oil and natural gas

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[6] Statistical Data of the Uranium Industry - January 1972, Grand Junction Office, U.S. AEC.

[7] National Gas Technology Task Force for the Technical Advisory Committee of the National Gas Survey by the Federal Power Commission

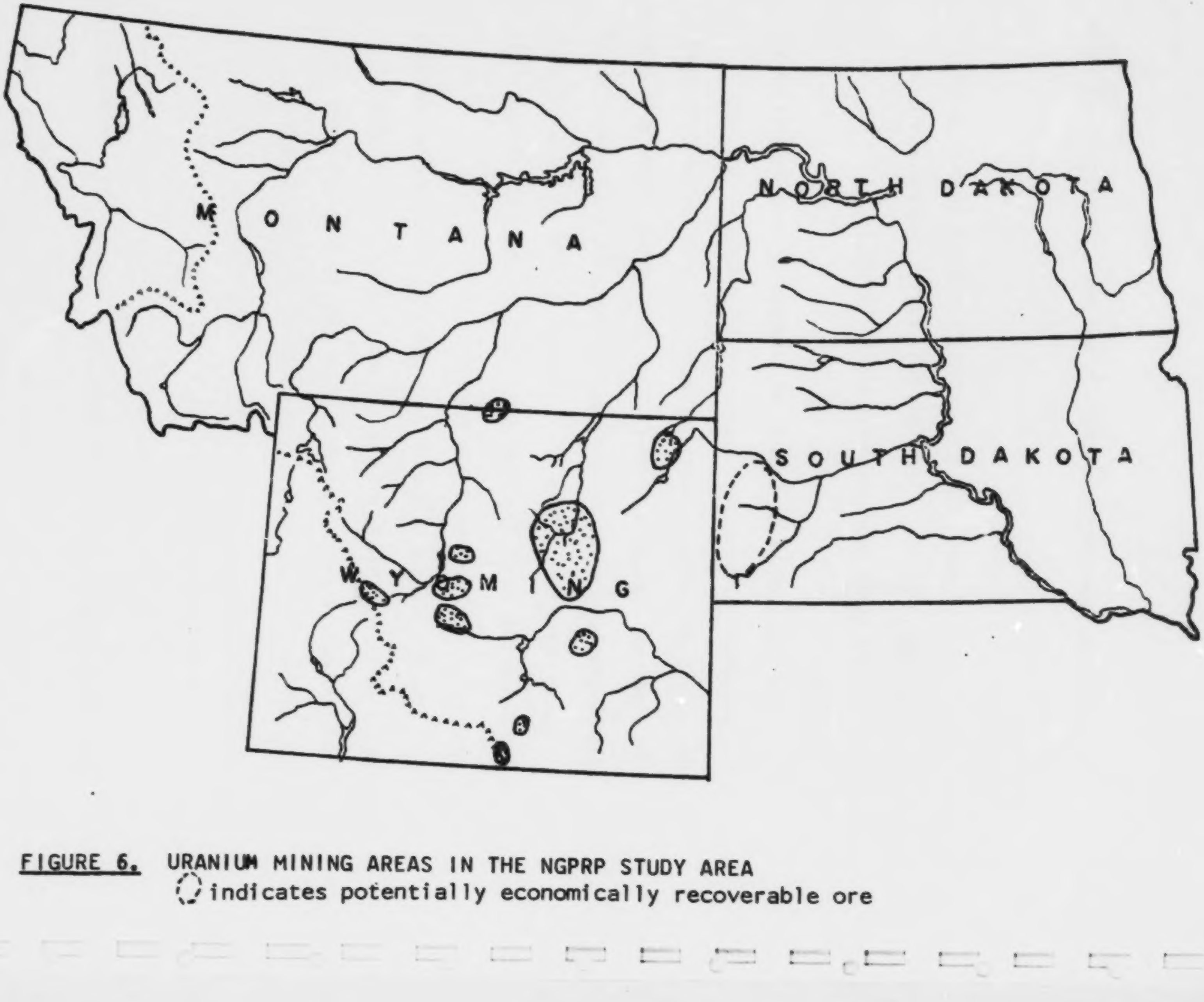

MONTANA
NORTH DAKOTA
SOUTH DAKOTA
WYOMING

FIGURE 6. URANIUM MINING AREAS IN THE NGPRP STUDY AREA
◌ indicates potentially economically recoverable ore

activity in the NGPRP area are displayed in Figure 7.

The six-state area of Region VIII is relatively "undeveloped" in the conventional sense of the word. When these six states are combined with Idaho, New Mexico, Arizona, Oregon, and Washington, one finds oneself in an essentially agricultural and recreational environment with sparse population as opposed to one in which urbanization and industrialization prevail. For example, the average population per square mile in eastern Montana and northeastern Wyoming is 1.4 people per square mile. Figure 8 is a population density map of the NGPRP study area. The environment in this area is one of the least polluted and abused in the nation, representing very important environmental values that will continue to increase in importance as the nation becomes more populated and urbanized and as people continue to demand unspoiled environments. Thus, it is impossible to correctly represent environmental matters in terms of miles of streams contaminated or cubic meters of air to be cleaned up. Rather, we must speak in terms of prevention of contamination - prevention of not just water and air contamination, but also prevention of land contamination, ground water contamination, and aesthetic contamination.

In order to prevent environmental contamination and to minimize the unwanted impacts of the coal development that is already underway on over 1,300,000 acres ($5x10^5$ hectares) of the area 8) in the Northern Great

---

8) The Bureau of Land Management has awarded permits and leases for Fort Union coals on in excess of 320,000 acres ($1.3x10^5$ hectares) of public lands for coal exploration and development. The Bureau of Indian Affairs has leased over 16,000 acres ($6.5x10^3$ hectares) and issued exploration permits for over 500,000 acres ($2x10^5$ hectares) on the Crow and Northern Cheyenne Indian Reservations. State leases total over 490,000 acres ($2x10^5$ hectares).

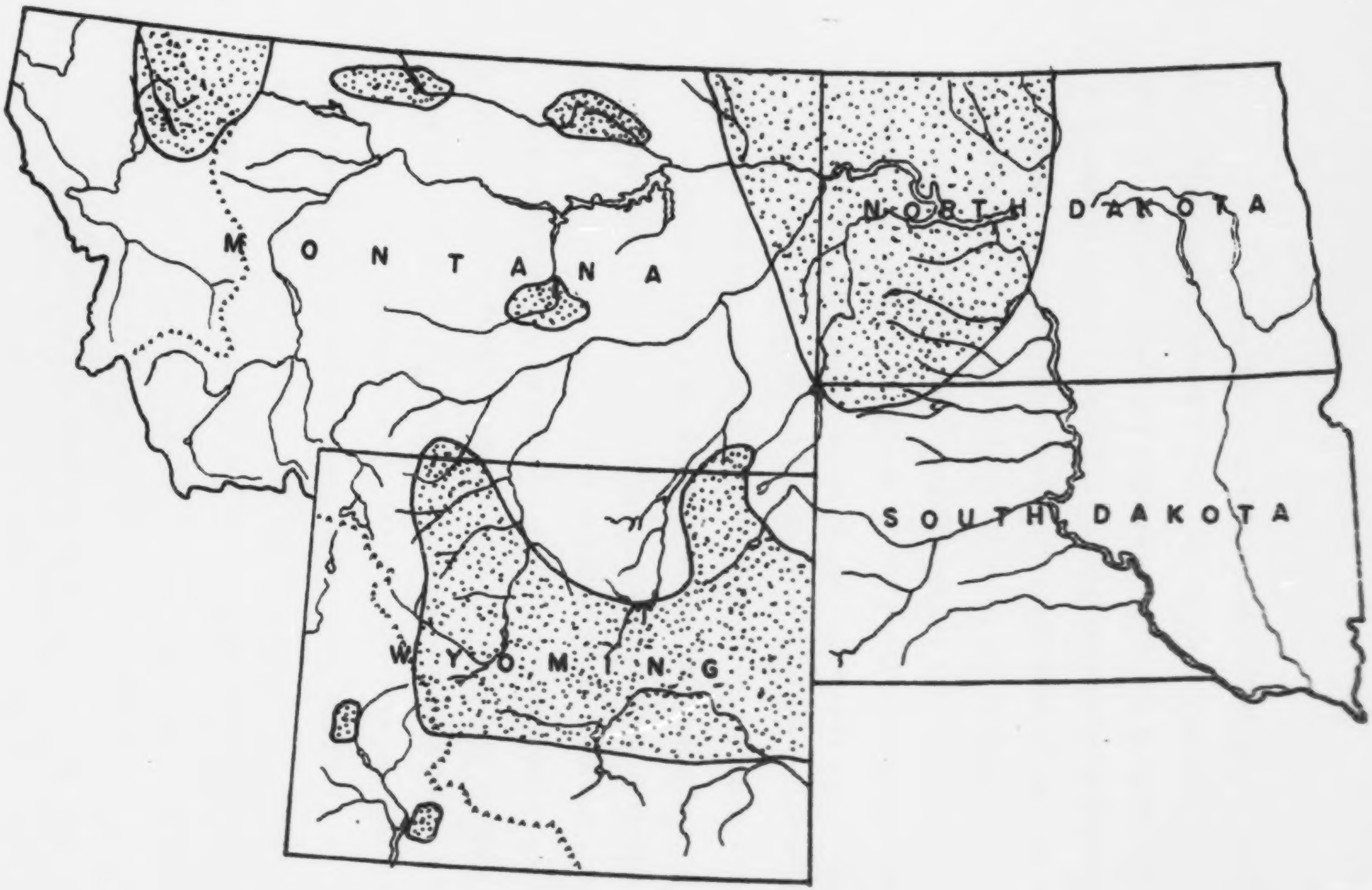
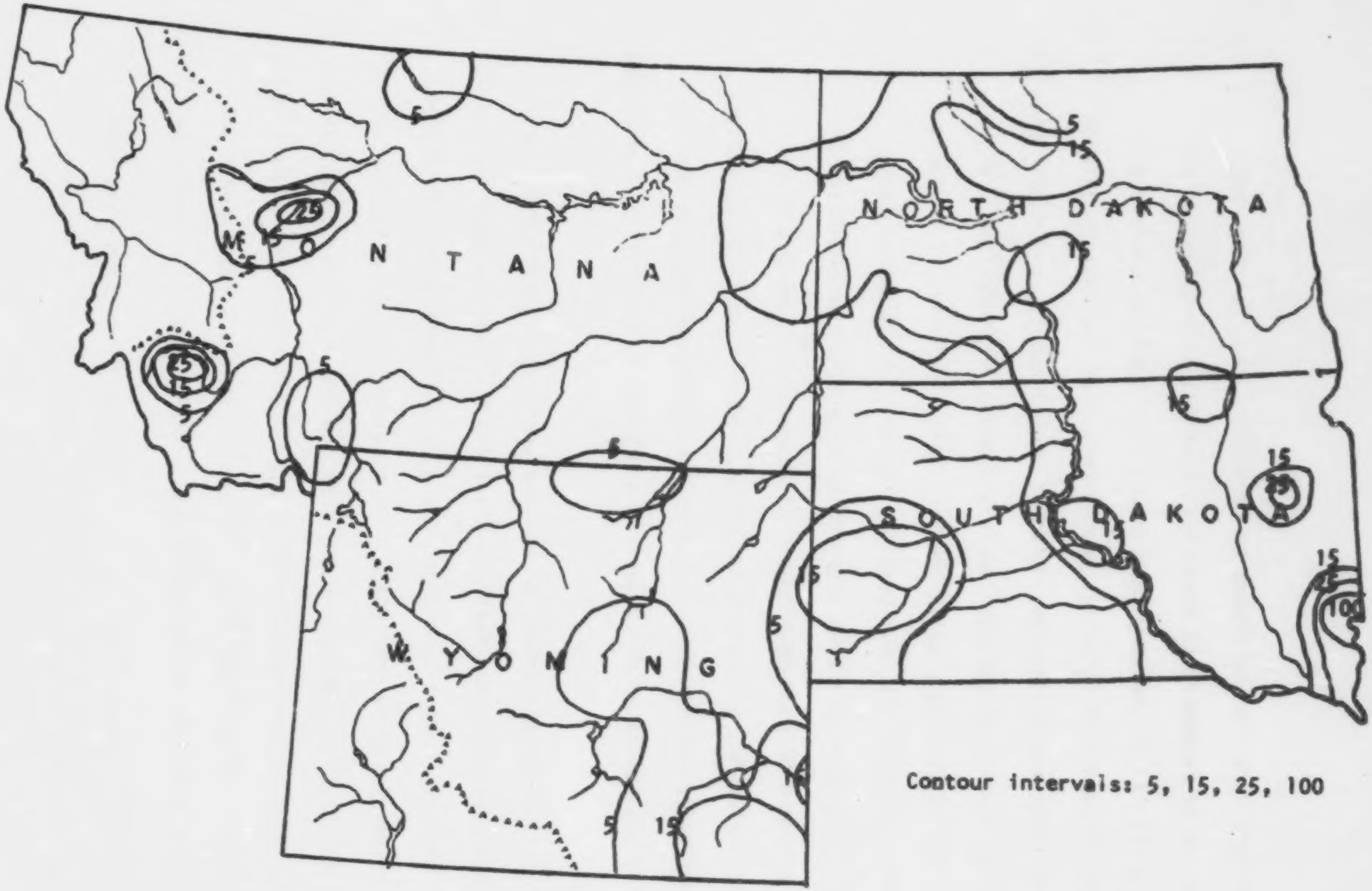

MONTANA
NORTH DAKOTA
SOUTH DAKOTA
WYOMING

FIGURE 7. OIL AND GAS FIELDS IN THE NGPRP STUDY AREA


MONTANA
NORTH DAKOTA
SOUTH DAKOTA
WYOMING
5
15
25
100

Contour intervals: 5, 15, 25, 100

FIGURE 8. POPULATION DENSITY 1960 - PEOPLE/SQUARE MILE

Plains and more lands in the States of Colorado, Utah, Arizona, and New Mexico, it is necessary to prescribe solutions to problems of air and water pollution in the very near future. In order to achieve an orderly "development" of potential energy resources, we must be able to properly estimate energy demands, modes of energy supply, and total potential environmental impacts of various levels and modes of production. With respect to the coals occurring in the Fort Union Formation of Montana, North Dakota, South Dakota, and Wyoming, the only estimates of these factors given to date have been prepared by organizations dedicated to supplying a demand through development of resources.[9] No public or conservation-oriented, or broad based state, Federal, or local participation in developing estimates has occurred. Little consideration has been given to the possibilities of conserving energy or to controlling the demand for energy.

There are numerous unknowns to be considered when speaking of coal and power development in the Northern Great Plains, not the least of which is whether the people want such development, and if development is desired, how development should be conducted. The amount of water available for use in cooling is unknown. The best type(s) of cooling for power plants in the area has not been determined. The advantages or disadvantages of developing power from other energy fuels found in the area have not been identified ... should power be produced in the region for distant areas? ... and so on.

---

[9] North Central Power Study (1971)

We believe that there is a need to provide these types of data to the decision-making entities of the Northern Great Plains Region such that choices relating to coal development can be made based on data, not just on guesses. We believe that the Northern Great Plains Program can serve as the vehicle to collate and generate data for this purpose. Further, it is important to act while a moratorium still exists in the issuance of prospecting permits for coal. 10)

Need for Regional Participation in the NGPRP

The credibility of Region VIII and the agency as a whole rests on the positive actions and decisions we make to become involved in major efforts of investigating the planning and management of regional energy resource development. Our past experience indicates the relative ease of preventing problems from occurring as opposed to remedying the harmful effects once the problem has surfaced. Long-term resource development in Region VIII will prove no exception.

The Northern Great Plains Resource Program (NGPRP) provides an important opportunity for regional participation that can be the vehicle for environmental protection throughout the region as energy resource development occurs. In addition to assuring maximum regional and local input to the study, regional participation will aid ongoing programs by facilitating and promoting day-to-day contacts with the involved states,

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10) Federal Register, Tuesday, February 20, 1973, Doc 73-3175 - order effective February 13, 1973 and "until further notice." Order No. 2952

affected industries, and local interests. This regional office has received correspondence (Appendix) from the States of Montana and Wyoming, and public groups such as the Wyoming Audubon Society requesting assistance in areas such as air quality monitoring, diffusion modeling, and trace element analysis of coals. Since new power plants will continually generate interest in these areas, we anticipate many Regional NGPRP initiated programs continuing past the study's formal conclusion.

Furthermore, while in many respects the NGPRP resembles the *Southwest Energy Study*, it differs from it in the sense that considerable development had already occurred in the Four Corners area at the time of the *Southwest Energy Study's* inception. The NGPRP's analytical look is occurring much earlier in the decision-making process. Conceivably, for this reason alone, the NGPRP may make a greater impact than the *Southwest Energy Study* on the planning and management of energy resources. In addition, whereas the *Southwest Energy Study* used only existing data, the NGPRP will acquire the necessary information to fill the gaps in the presently available data. The NGPRP must also facilitate public participation in all stages of the Program's efforts.

The remainder of this document is organized as follows:

Section II describes a brief history and organization of the NGPRP.

Section III presents the objectives of EPA involvement in the NGPRP.

Section IV is an Accomplishment Plan detailing regional resource needs. These needs are based upon our best estimates as to the total work to be done and the regional input required to satisfactorily affect the final outcome of the program. Allocation of lesser resources has the danger of weakening our chances of influencing the course of the study and offers a sound basis for the agency to reevaluate its positive position on participation in the study. Such lesser participation would not allow EPA to do an adequate job and yet would erroneously lead outsiders to believe that we had done our job. In certain instances this Plan identifies activities and contract funds that are necessary to accomplish the objectives. Though it will be appropriate for EPA to allocate monies and conduct activities, every effort will be made to perform the activities in close cooperation with and with monetary support from the other Program participants.

Section V is a brief summary.

II. Northern Great Plains Resource Program: Its Evolution and Present Framework

The increasing interest and activity directed at this region's energy resource development and the large number of applications pending for permits to explore, lease, and develop the coal reserves of hundreds of thousands of acres of state, Federal and Indian land prompted Region VIII to draft letters to Secretaries Morton and Butz, calling for a comprehensive systematic study of coal development in the Fort Union area. The Administrator signed these letters on March 24, 1972. Secretary Butz responded on May 2, agreeing to the need for such a study. He suggested that other minerals be investigated and also to include in the study areas such as national energy requirements, environmental protection, and land use.

Secretary Morton's reply of July 27, expressed a similar interest and indicated Interior's proposal for a joint Federal/state management plan to be used in land use and coal development decision-making. Meetings involving EPA, Agriculture, Interior, and Commerce (through the Old West Regional Commission) officials on July 28, and August 9 and 10, led to an agreement between the agencies to initiate a Federal/state task force to investigate the economic, environmental and social impacts associated with large-scale mineral resource development, primarily coal, in the States of Montana, Wyoming, North and South Dakota. A Program Review Board at the Assistant Secretary and Governor level was formed to provide coordination and policy leadership for the study. The Board created a Program Management Team to develop an outline for this Northern Great Plains Resource Program and to supervise matters on a day-to-day basis. This group consists of representatives from EPA, Interior, Agriculture, Commerce, and the States of Montana, Wyoming, North and South Dakota, and Nebraska.

Framework

The Program Management Team released in January 1973, a final outline for the plan of the NGPRP. A description of the program's framework follows. The text of the Plan Outline of the NGPRP is included in the Appendix.

Objectives

The objectives of the NGPRP are three-fold:

1. To provide data and analytical models enabling assessments of the consequences of various courses of action to be made.
2. To bring together Federal, state and local groups concerned with the planning and management of this region's energy resources. The aim is for a coordinated regional planning program.
3. To promote the exchange of information between organizations that have common activities such as data collection, research, planning, etc.

Program Sections

The NGPRP is divided into five principal "Sections" or phases as follows:

1. Program design
2. Regional profile
3. Constraints and alternate strategies
4. Analysis of consequences, and
5. Preparation of final report

These Sections are further described below.

1. Program Design:

After Federal, state, and local groups have had an opportunity to comment on the NGPRP outline, it will be enlarged into a Program Design which will enumerate specific data, research, and study needs. Comments from the public, as well as other non-government groups, will be solicited here as well as in the other program sections. This Regional office stresses strongly the need for public participation throughout the course of the study. The Southwest Energy Study was criticized for insufficient public participation, 11) and we must avoid making this mistake during the course of the NGPRP. Region VIII has drafted a set of recommendations concerning public involvement in the NGPRP (these recommendations appear in the Appendix), and has forwarded them to the Program Management Team.

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11) Rocky Mountain Center on Environment ("ROMCOE") letter dated 16 March 1973 to J. W. Larson, Interior, from R. P. Hansen, A. G. Melcher, and K. Fletcher

2. Regional Profile:

Data will be collected and analyzed to give a profile of the region's mineral, air, water, and surface resources; baseline environmental quality; and social, economic and cultural attitudes. This inventory will begin shortly.

3. Constraints and Alternative Strategies:

Prior to any enumeration of possible alternative strategies for the region, studies of legal, environmental, air, water, institutional, social, economic, and physical constraints operating in the area will be made. Once this survey is completed, alternate strategies will be considered - alternate strategies such as no further development, different rates and intensities of coal development, mine-mouth power generation, shipping coal outside the region, gasifying coal, development of other energy and mineral resources, etc. In addition, strategies such as required legislation and changes in leasing policies will also be considered.

4. Analysis of Consequences:

Models and analytic methodologies will be developed to assess the environmental, economic and social impacts of the various strategies and courses of action developed in the previous section.

5. Final Report:

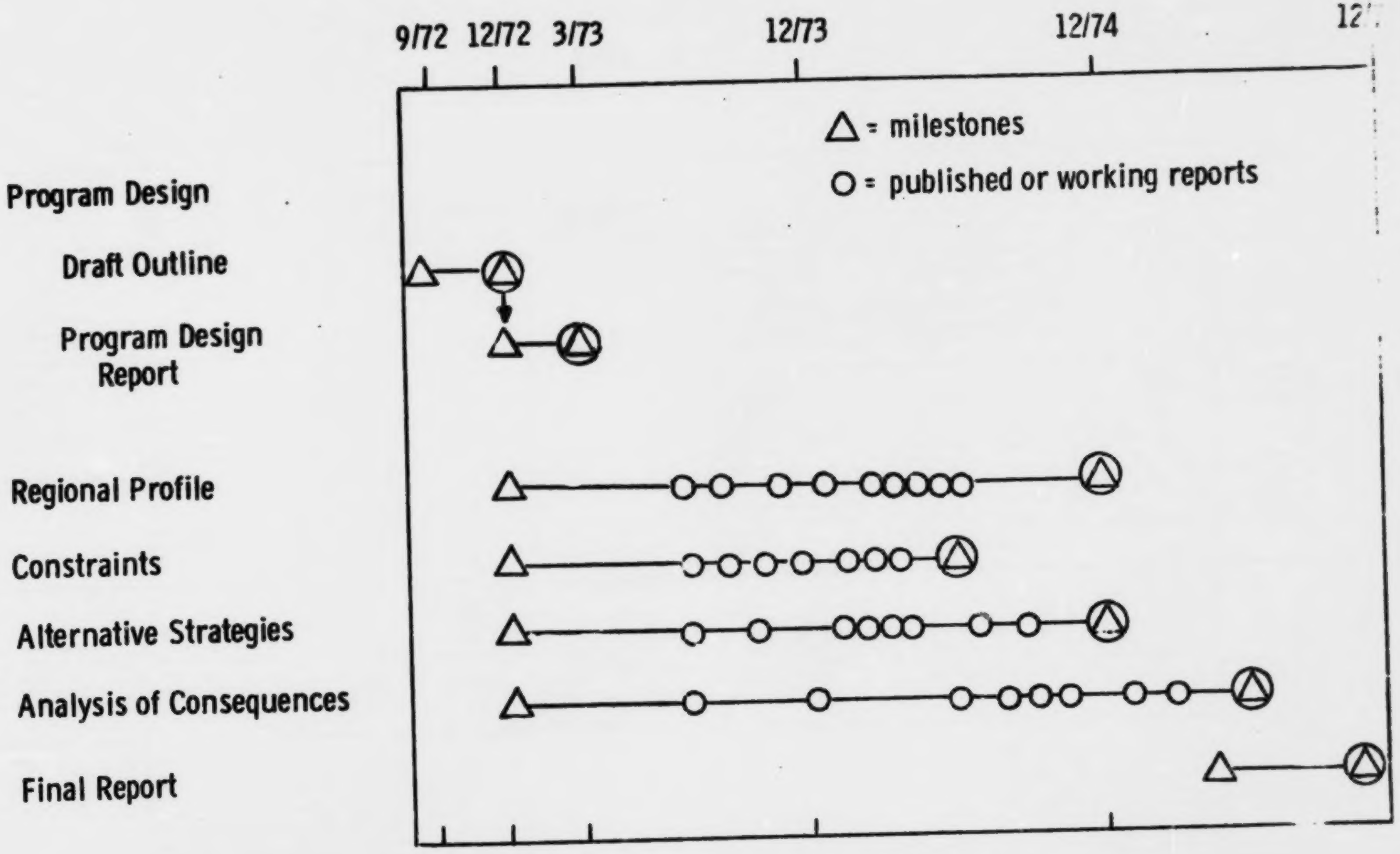
A final report compiling the results of all the studies and investigations will be written. However, data and interim reports will be available to decision-makers as they are generated in the course of the study.

The NGPRP will operate under an approximate three-year time-frame. The program sections will be time-phased and each will not necessarily last for the entire duration of the study (see Figure 9). Activity time-frames are discussed in Section IV, the Accomplishment Plan.

Task Matrix

The technical work will be performed by seven "Subject Area" Task (or "Work") Groups, schematized in the so-called Task Matrix (see Figure 10 and Explanation For Figure 10). These groups will be staffed by members of various Federal and state agencies and private organizations. We must reemphasize the need for public involvement, especially at this Task Group level. Region VIII will factor into its Task Group activities advice and expertise from the private and local sectors whenever possible.

Varying levels of agency input to the Task Group have been characterized on the Matrix: Lead (L); Participant (P); and Contributor (C). Lead agencies will be responsible for administrative and organizational items in addition to their decision-making role. Participating agencies will have a complete involvement in decision-making and the review of reports produced by their group. Finally, the contributing agencies will provide appropriate input in their areas of expertise.



SCHEMATIC REPRESENTATION OF PROGRAM SCHEDULE.

TIMES SHOWN ARE TENTATIVE PENDING FURTHER WORK.

FIGURE 9

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January 19, 1973

TASK MATRIX

PROPOSED WORK GROUPS AND PARTICIPANTS

SUBJECT AREAS							
G National Energy Considerations	F Socio-Economic and Cultural Aspects	E Surface Resources	D Atmospheric Aspects	C Water	B Mineral Resources	A Regional Geology	Read numbered blocks for program sections. Read successive blocks of lettered columns for work group title, proposed group makeup and type of subject matter addressed.
PRINCIPAL AREAS OF INTEREST							
Energy supply and Demand Energy technology	Existing local and regional economy Social institutions Attitudes Archeology & history Aesthetics	Soils Vegetation Timber Grassland Other Fish & wildlife Recreation Agriculture Scenery Wilderness	Compositional & regional dynamics	Surface Sub-surface	Coal Oil & Gas Uranium Other	Land form Topography Geology	
AGENCY PARTICIPATION*							
L-DOI (Energy Office) P-EPA, DOC, FPC, AEC, USDA, BM, BLM, BSF&W C-OST, OEP, Indust.	L-USDA P-USDA, DOC, HEW, BIA, BLM, NPS States, Indust. Private Org. C-BOR, EPA, HUD, DL	L-USDA P-BLM, BOR, BSF&W, EPA, NPS States, Priv. Org. C-BLM, COE	L-EPA P-NOAA States, Priv. Org. C-USDA, DOI	L-BR (Supply) P-EPA (Quality), GS (Basic data), NWRC, BSF&W, BLM, USDA, COE, NPS States, Priv. Org. C-BOR	L-BM P-BLM, EPA, USDA, BR, GS States Industry, Priv. Org. C-AEC	L-GS P-USDA, States C-BLM	PROGRAM SECTIONS
SUBJECT MATTER CONSIDERED							
	Location Distribution Importance	Location Production Current Use Ownership & control Zoning	Climate Quality	Quantity Quality Current & projected use (current plans)	Location & depth Grade Ownership & control	Scale-Coverage	1 Regional Profile
Current & Projected energy Technology National & Regional Energy Fuel Situations	Attitudes Physical constraints or change Economic constraints on change	Ownership & control Economic Biological & physical Attitudinal Zoning	Quality Standards	Rights Compacts Quality & Quality Standards Location Attitudes	Mineability Ownership, leases Reclamation laws Demand Attitudes	Slope Stability	2 Constraints on Changes
Alternate regional energy resources development strategies and technologies No development	Continue current status Accelerate selective development	Continue current practices Accelerate selective development	Alternative point source locations	Surface development alternatives Ground water management alternatives No development	Extraction & exportation Local Processing Local energy conversion Local industrialization No development		3 Strategies for Change
Satisfaction of National and Regional Energy and Fuel Demand	Preservation of current life style & values Growth of population & economy with possible disruptions & losses	Interference from other developments Preservation/Conservation Consumption	Regional quality pollutant dispersion patterns	Consumption vs Conservation Quality	Consumption vs Conservation		4 Analysis of Consequences

*L- Lead; P - Participant; C - Contributor

FIGURE 10

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TASK MATRIX

The attached matrix indicates the scope and organization of the program and illustrates how work groups, organized on the basis of technical expertise, will participate in each of the four sections of the program as they are described in the draft design outline. The tasks shown on the matrix are intended to be illustrative rather than exhaustive. The work groups are designed to bring together related inventory and modelling expertise throughout the study. At the same time, the major sections of the program will be coordinated across work group lines. Staff coordinators will be in charge of each program section and may be members of the Program Management Team.

The right-hand column of the matrix indicates proposed agency assignments. Lead agencies are designated by L. These agencies will have administrative and organizational responsibilities, subject to overview by the Program Management Team, and will be full-time participants. Participating agencies are indicated by P; they also are likely to have full involvement in decision-making and report review within the area of responsibility of the work group. They will make major contributions to the work, as well as, to decision-making and review. Contributing agencies are designated by C; they will provide input to the program as appropriate and review reports within their areas of expertise.

Key to abbreviations:

AEC - Atomic Energy Commission
BIA - Bureau of Indian Affairs
BLM - Bureau of Land Management
BM - Bureau of Mines
BOR - Bureau of Outdoor Recreation
BR - Bureau of Reclamation
COE - Corps of Engineers
DL - Department of Labor
DOC - Department of Commerce
DOI - Department of the Interior
EPA - Environmental Protection Agency
FPC - Federal Power Commission
FS - Forest Service
GS - U. S. Geological Survey
HEW - Department of Health, Education and Welfare
HUD - Department of Housing and Urban Development
MRBC - Missouri River Basin Commission
NOAA - National Oceanic and Atmospheric Administration
NPS - National Park Service
OEP - Office of Emergency Preparedness
OST - Office of Science and Technology
BSF&W - Bureau of Sport Fisheries and Wildlife
USDA - U. S. Department of Agriculture

EXPLANATION FOR FIGURE 10

EPA will lead (L) the Atmospheric Aspects Task Group and the Water Quality Aspects of the Water Task Group; participate (P) in the Mineral Resources, Surface Resources, National Energy Considerations Task Groups; and contribute (C) to the Socio-Economic and Cultural Aspects Task Group. Limited input is planned to the Regional Geology Task Group.

Task Group Leaders and their affiliations are listed below:

A: Regional Geology	W. R. Keefer (USGS - Denver)
B: Mineral Resources	Ottey Bishop (USBM - Denver)
C: Water	Phil Gibbs (BR - Billings) (Robert Hagen - EPA, Denver, for water quality aspects)
D: Atmospheric Aspects	Louis Johnson (EPA - Denver)
E: Surface Resources	Otis Copeland (USDA - Ogden)
F: Socio-Economic and Cultural Aspects	Frank Osterhoudt (USDA - D.C.)
G: National Energy Considerations	James A. West (Interior ASMR - D.C.)

Status of Task Groups

Presently, the Task Groups are developing preliminary work plans and some Groups have held organizational meetings.

III. Objectives of EPA Involvement in the Northern Great Plains Resource Program

Objective

In Sections I and II, the need for and purpose of the Northern Great Plains Resource Program was discussed. The objectives of that program are necessarily diverse since the interests of many sectors are represented. This Accomplishment Plan is, however, directed toward the Environmental Protection Agency's participation in the program and, in particular, that participation either conducted in response to the program or discharged as a normal responsibility toward the Northern Great Plains by the Region VIII staff of the EPA.

The fact that substantial EPA involvement in the program is critically necessary, has been previously indicated. 12) The need for strong regional representation in the EPA involvement is considered obvious. We believe that the credibility of EPA and the regional offices of EPA rests upon the positive actions, decisions, and influence we muster during the implementation of the program.

The specific objectives of EPA involvement center upon the development, collation, and presentation of data with which, or through the use of which those decision-making entities will choose the most acceptable course of action relating to resource development in the Northern Great Plains area. Primary EPA involvement will be related to those areas in

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12) An "Action-Memo" dated 3 August 1972 "Mineral Development in the North Central United States" - AH

which we have been directed, by law, to work, namely; water quality, air quality, radiation, solid waste, and aesthetics (the latter as addressed in the National Environmental Policy Act). We have included in the Appendix a statement of statutory justification for EPA participation in the NGPRP. Secondary EPA involvement will be in the broader areas that tend to have the most impact upon EPA's areas of responsibilities. These more general areas include revegetation, population growth, energy demand and supply, mining methods, wildlife and recreation values, and the choices we have between energy fuels.

A major objective of EPA participation in the NGPRP is to aid Region VIII, EPA to define and evaluate its on-going environmental protection program as related to this area. The large data base, the research, and the alternatives of development, technology, and environmental impact will be of immense value to Region VIII in all of its program planning and implementation processes. Techniques and analyses developed and refined here will also be of great value to other regions, particularly those in the west, in planning for environmental protection and pollution control.

Approach or Secondary Objectives

In order to achieve our goal of following the most environmentally-acceptable course of action, it will be both necessary and appropriate to impact the Federal, state, and local decision-making processes and, in fact, to assure the development of such processes if they are presently absent. Such interfacing with other agencies and the public sector will take place both inside and outside the Program.

It will be necessary, because of the large geographic area under consideration for coal extraction, because of the large power-generating capability considered as possible, and because of the still larger area to which power may be supplied, to select those areas of the program where EPA involvement may show the greatest return or benefit. Thus, a continuing objective will be to strengthen state and local capabilities wherever necessary such that environmentally sound development, commensurate with EPA's directives and responsibilities, is achieved. EPA will also strive to have other Program participants contribute both expertise and funds to accomplish those tasks we see as critical to the Program.

In many cases, it will be appropriate to develop arrays of data describing alternative modes of development and the results of such development. To a degree, this is "modeling." It will often be necessary to develop and refine the tools for "modeling" and then to transfer the "modeling" technique to other activities, such as other Task Groups and the States, for use.

Many tasks will be performed simultaneously. Many task items will be completed and reported prior to the end of the program in order that today's decisions may be made based upon as much information as is possible to gather. The organization and interrelations of the program elements will be both complex and challenging. Yet, successful implementation of the tasks is critical to EPA's mandates.

In the end, the success of the program will be determined by the public. It can therefore never be emphasized enough, that public involvement, from the beginning, is the key to a successful program.

Region-wide Considerations (Region VIII)

If coal-development were the only development facing the Rocky Mountain-Prairie Region (Region VIII) it would be possible to dedicate time and effort to the evaluation and direction of that possibility with little concern over any other mineral resources. But the potential reserves of other energy fuels, extant in substantial amounts throughout the six-state region of Region VIII, fuels such as oil, gas, water for hydro-electric plants, oil shale, uranium, geothermal heat, and solar energy, make it necessary for EPA to require simultaneous consideration of most all energy fuels rather than just coal. The large cumulative total of energy fuels in the Region also makes it necessary to consider energy demand alternatives.

As the inhabitants of the region recognize, not only does this region view its scenery as a prized resource, but additional growth, in terms of more people, has a far greater potential for causing detrimental impacts on the environment in the Great Plains and Rocky Mountain area than the same growth does in the established metropolitan centers of the United States. Thus, the addition of a power plant and the support it requires and the secondary growth that it can stimulate are all major factors in the lives of the area inhabitants.

Trans-basin diversions of water are common in Region VIII and may increase if water-cooled power plants are constructed. Such diversions may have repercussions on agricultural development and may significantly affect efforts to control salinity. Thus the potential for coal and power development in the Northern Great Plains could have a serious impact on water quality in the western portion of Region VIII.

Furthermore, review of the implications of resource development occurring or scheduled to occur in the Northern Great Plains can supplement the expertise already within the region and EPA to in turn allow us to cope with similar developments such as nuclear stimulation of gas on the western slope of the Continental Divide, or oil shale development that could occur in the future.

It should be noted that the geographical boundaries of the NGPRP will vary according to the subject surveyed. It will be a Region VIII objective to insure that those impacts that may extend out of the NGPRP area of four states be adequately assessed.

IV. Detailed Work Accomplishment Plans and Resources

Regional Organization, Coordination, and Management

The complex nature of the Northern Great Plains Resources Program, the close alliance of the Program with the responsibilities of the EPA, and the discharging of these responsibilities through EPA's Regional offices, document the need for the assignment of a regional coordinator for the NGPRP. The assignment will involve a person with sufficient technical expertise in the areas of energy demand and supply, earth and atmospheric sciences, and environmental problems peculiar to the West and with demonstrated managerial capabilities. The person should possess or be in a position to acquire the authority to pursue the regional objectives of Program participation.

The regional coordinator may serve to perform selected portions of the interagency coordination role for the NGPRP - at the regional level. The regional coordinator will serve as liaison between NERC personnel and other EPA personnel, such as those representing the Division of Field Investigations (DFI) who may or should perform select activities for the Program.

The regional coordinator for the NGPRP must have inter-divisional authority to coordinate and implement the regional inputs to the Program with such implementation limited to that authorized by the Accomplishment Plan developed for the Program.

The Regional Office will have, on its divisional staffs, certain individuals who will be assigned to the Program through this Accomplishment Plan, from periods ranging perhaps from three years at a full-time rate, to essentially part time, for as little as a week (during field surveys). While the activities of these individuals will not be closely scrutinized by the regional coordinator, it will be necessary for both the individuals and the coordinator to consult frequently on the regional activities related to the Program. When inter-divisional support is required, the coordinator will arrange such support within the framework of this Accomplishment Plan.

With the exception of the regional coordinator, and secretarial support assigned to that position, activities performed by the Regional Office of EPA will be performed within the existing organizational structure. The regional coordinator may be assigned to the Regional Administrator's Staff such that the inter-divisional responsibilities, the technical expertise, regional authorities, and the information-disseminating capability of the coordinator may be properly placed. In the event that the Regional Administrator and the regional coordinator deem that placement in other than the Staff position would serve the objectives of this Program in a more efficient manner, the regional coordinator may be assigned to the Director's office of the Air and Water Programs Division. In all cases, a rule-by-committee approach should be avoided.

Table RC describes the major activities planned for the regional coordinator and his support staff. The task is scheduled to require 0.25 years of effort in the remainder of FY 19[illegible], 1.6 years of effort in FY 1974, and 1.5 years of effort in FY 1975. An additional 1.0 years of effort during FY 1976 would be required to complete the transfer of Program products and continuing EPA functions. The FY 1973 (or current) effort is conducted largely by a composite of regional personnel and must be, as soon as feasible, transferred to the coordinator to assure a unified Program. Such a transfer would take place upon designation of a regional coordinator. A Regional Energy Task Force would still exist to gather and disseminate information to the Division staffs.

The regional coordinator may serve at grades equivalent to GS 14-16 and may be temporarily assigned to the Region from other EPA facilities. It must be emphasized that the regional coordinator should satisfy some very stringent requirements for demonstrated competence in both technical and managerial fields. A strong foundation in economics, control technology, or similar fields is most necessary. An established and highly regarded reputation in EPA Headquarters is desirable.

Table RC: - Northern Great Plains Resource Program - EPA Region VIII Accomplishment Plan

Task: Regional Coordination

Activity	FY 1973	FY 1974	FY 1975	FY 1976
1. Coordination of EPA Regional Activities conducted pursuant to the NGPRP through discussions with NGPRP personnel and EPA Regional Staff - including inter-divisional direction of activities. Siting Conference Activities and report coordination.	1/8	1/2 $35,000 contracts for conference.	3/8	1/2
2. Coordination of responses to and solicitation of information from or participation of the public and local sectors; reporting. Managerial function with technical expertise required.		1/4	1/4	
3. Chairing of Regional Energy Task Force. Task Force comprised of representatives from Division Directors' Staffs. Work Plan revisions, continuing planning effort. Managerial function with technical expertise required.	1/8	1/8	1/8	
4. Participation as primary Regional representative on Subject Area "G" Work Group, National Energy Considerations. Technical expertise covering many areas required.		(Resource allotment shown on tabulation for Task Group Subject Area "G")		
5. Secretarial Support - Secretary-typist.		3/4	3/4	1/2
TOTALS:	0.25	1.63	1.5	1.0
("Secretarial")	(-0-)	(0.75)	(0.75)	(0.5)

Note: Allotment in terms of work years.

Specific Task Group Assignments

1. Introduction

The remainder of this section is organized in concert with the Task Matrix of the Northern Great Plains Resource Program as presented earlier in this Plan (Figure 10). Each "Subject Area" or "Task Group Area" is treated separately. Note, however, that certain activities listed for one Subject Area include or run together with activities listed for a second or third Subject Area. Resource allotments have not been duplicated among Areas.

We have not divided the EPA resource allotments along the "Program Section" divisions shown along the right side of the NGPRP Task Matrix since such subdivisions tend to be inappropriate for many of the activities that in essence "cross" these divisions. We have instead utilized these divisions ("Regional Profile," Constraints on Change, etc.) in the activity description wherever appropriate.

The descriptions of each Task Group are based upon EPA's view of each Group's assignment. We are not aware of any detailed listing of specific assignments nor have the detailed work plans for each Task Group been formulated. The Task Group assignments of activities are therefore subject to change.

The activities listed may, as time progresses, be performed by groups other than EPA and it is conceivable that the EPA resource allotments shown herein will be transferred to other activities or between Task Groups, and even reduced. However, since there is, at the time of writing, no guarantee of what other groups will provide or assume as their activities, EPA has attempted to present a fairly comprehensive listing of the activities it feels should be performed and EPA has attempted to identify its resources to assure that the job is done.

2. Task Group for Subject Area A - "Regional Geology"

Task Group A has been assigned the task of preparing maps or other representations showing such geologic and topographic features as are felt to be important to the siting of coal mines, power plants, transmission lines, urban centers, transportation routes, and secondary industry. We propose that this Group will produce graphical representations, in much the manner considered for Environmental Impact Statements, which will evaluate the geology and topography from the standpoints of stability and strength and geologic importance. It is debatable as to whether the Task Group should also develop hydrologic (aquifiers, areas of recharge, wells, potentiometric surface) maps. For this first trial, we have assumed that the hydrologic mapping will be conducted by the "Water" Task Group.

Note also that the Regional Geology Task Group will probably provide data to the "Mineral Resources" Task Group ("B") and that some divisions of work will be agreed upon.

EPA involvement in the work of Task Group A, as that task has been defined in here, is projected as relatively minor with 0.04 of a work year programmed for FY 1973, and 0.085 of a work year each, for FY 1974 and FY 1975. The individual would have a background based strongly in the earth science. Necessary secretarial support is planned to be minimal and available from the following Task Group, Mineral Resources ("B").

Table A - Northern Great Plains Resource Program - EPA Region VIII Accomplishment Plan

Task: Regional Geology; Subject Area "A"

Activity	FY 1973	FY 1974	FY 1975	FY 1976
1. Review of Work Plan and Periodic Review of Task Group Output to insure that important parameters are evaluated and that the format(s) allow evaluation of various development routes. Insure that earch sciences data are considered in the light of the probability of secondary growth and industry, and alternative modes of power generation and resource utilization. Insure that geologic situations of aesthetic or academic importance are adequately considered. Technical function with earth sciences emphasis.	1/25	1/12	1/12	
TOTALS:	0.04	0.085	0.085	0
("Secretarial")	(-0-)	(-0-)	(-0-)	(-0-)

Note: All allotments in terms of work years

3. Task Group for Subject Area B - "Mineral Resources"

Task Group B has been assigned the responsibility of quantifying the energy fuels resources (coal, oil and gas, uranium, oil shale, geothermal, and hydro) and other mineral resources (from sand and gravel to gold) in the Program area. Coordination with Task Group A will be necessary. Decisions are necessary, in at least the realm of hydroelectric resources, as to what this Task Group (B) will do and how much Task Group C (Water) will perform. Interdependence between Task Groups B and E is also suggested.

We have assumed that, in addition to reviewing land and minerals owernship, Task Group B will address portions of the mined land reclamation problem, trace-element composition of coals, mining methods, leasing and mining laws, and the technical methods of producing energy from coals and, secondarily, from other energy fuels found in the Program area. The latter has been separated from the Task Group on "National Energy Considerations (G) in order to help reduce to a reasonable size the work load of Task Group G.

The Regional office of EPA has identified the need for financial and technical assistance to the region from the Cincinnati National Environmental Research Center - Mine Drainage Grants Office. This need is quantified in Table B as it is in Table E (Surface Resources). In particular, direct assistance by Messrs. Ron Hill and Elmore Grim is required in order to utilize their expertise in the area of land reclamation, mining methods, and environmental quality.

It will be necessary for Task Group B to avoid assuming a purely mineral resources evaluation role considered typical of earth scientists and resource-development agencies. Active involvement by EPA will be directed toward assuring a more modern role that includes engineering geology and land use factors and a role that includes public participation in all phases of the Program.

The total allocation of resources for this task is estimated to be 0.19 work years for the remainder of fiscal year 1973; 1.71 work years for 1974; and 1.65 work years for 1975, with $75,000 for contract support.

Table B. Northern Great Plains Resource Program - EPA Region VIII Accomplishment Plan
Task: Mineral Resources; Subject Area "B"

Activity	FY 1973	FY 1974	FY 1975	FY 1976
1. Review of Task Group Work Plans; Review of work products received from Group; general management; meetings; coordination of Task Group activities with EPA regional coordinators; development of arrays describing impacts of various degrees of development; insuring public participation; participation in Siting Conference (see Task Group D). Requires earth sciences/mining expertise combined with strong managerial capability.	1/24	1/4	1/4	
2. Review of probable Environmental Impact of extraction of and use of energy resources contained in NGPRP region including evaluation of mining/extraction methods. Coal gasification shale oil retorting, and other existing techniques of fuel to energy conversion must be reviewed. Requires mining & earth sciences expertise.		1/16 1/8 NERC-Cinn.	1/16 1/8 NERC-Cinn.	
3. Preparation of detailed trace-element data for western coals and in flyash to be combined with identical data for water and air. All to be combined to provide mass balances for selected trace elements (e.g. S, F, As, Ar, Cu, Sb, Bi, Hg, Mo, Ni, Pb, Be, V, Se, Ru, Cd, Sn, La, Rh, Os, Ga, Ge) (Cooperative effort with Task Groups C and D) (Activity 3 continued next page)				

Table B (Continued)

Activity	FY 1973	FY 1974	FY 1975	FY 1976
3. It appears appropriate to support an OR&M contract with an appropriate research entity to perform much of this survey.	1/24	1/4	3/16	
Certain data will be solicited from DOI. EPA will provide analytical assistance for unique elemental analyses and will provide	1/24 NERC-RTPark	1/24 NERC-RTPark	1/24 NERC-RTPark	
coordination of the trace element investigation. Geochemical or chemical expertise desired.		$50,000 Contract for analytical support plus coop. neutron activation analysis with USGS.	$25,000 Contract for analytical support plus coop. neutron activation analysis with USGS.	
4. Preparation and demonstration of mined-land reclamation methods in cooperation with Task Group E. It is proposed that this Task Group (B)		1/16 NERC-Cinn.	1/16 NERC-Cinn.	
provide information regarding the mechanics of achieving suitable soil surfaces to meet the land reclamation requirements specified by Task Group E (Surface Resources). Requires combination of mining methods and landscape expertise.		1/16	1/16	
5. Review and evaluation of and strengthening of legal restraints (leases, permits, rules, regulations, law, guidelines) existing or desired to control minerals extraction - mining law expertise required.	1/48	1/6	1/6	

Table B (Continued)

Activity	FY 1973	FY 1974	FY 1975	FY 1976
6. Evaluation of impact of energy fuels development on other mineral resources including those occuring as trace elements and interrelationships between energy fuels such as uraniferous lignite. Earth sciences and mineral economics expertise desired.		1/8	1/8	
7. Assistance with the identification and quantification of public attitudes relating to the "development" of mineral resources in and about the NGPRP area.		1/16	1/16	
8. Secretarial Support and Technical Support (Drafting, etc.)	1/24	1/2	1/2	
TOTALS:	0.19	1.71	1.65	(-0-)
(Secretarial)	(0.04)	(0.50)	(0.50)	(-0-)

4. Task Group for Subject Area C - "Water"

Task Group C has responsibilities for evaluating all aspects of surface and ground water quantity and quality. EPA has the lead for the water quality aspects.

Studies of water quality and pollution control will involve collection and interpretation of data, determination of significant pollutants and their effect on water uses, identification and evaluation of problem areas, and formulation of alternative means for solving the problems. The analyses will include the sources, amount and nature of wastes, present and expected control technology, and future waste discharges for receiving bodies. Future water quality will be calculated and compared with projected use requirements to determine problem areas. Consideration will be given to alternative means of meeting quality requirements in problem areas.

As part of the water resource work group, EPA will participate in the evaluation of environmental impacts resulting from water resource facility construction, i.e., dams, reservoirs, pipelines, canals. EPA will also evaluate secondary water quality impacts from increased population, urbanization, and associated activity within the study area.

The effects of pollution on various water uses and plans for improving water quality in affected areas will be determined. Water quality goals (ambient standards and other criteria) will be established and means to meet the demands will be closely coordinated with other facets of the study. This involves analyses of flows, treatment, and other control measures which will be needed to meet requirements for municipal, industrial, agricultural, recreational, and other water uses. Data from other agencies will be utilized to provide information on amount and nature of pollutants from natural sources and to determine stream and groundwater characteristics and other major considerations reflecting the physical effects of receiving bodies on water quality.

The difficulty of maintaining or restoring water quality could be increased because of the large depletions which could be made on the river system. The flow-water quality requirements of present and potential future instream water needs will be determined. These flow-water quality requirements will indicate the minimum quantity of water needed to carry natural pollution loads that are difficult to control and to maintain a physically and biologically viable stream system. With this information, water resources management plans could assure that minimum stream flows would be maintained to meet instream needs for quality control.

Although many pollution control situations will be met with existing information there is a continuing need for technological improvements in waste treatment, alternative water uses, and land treatment and erosion control measures. The Task Group will serve to focus adequate study and evaluation on alternate means of cooling, including air cooling. Methods and practices for the control of adverse water quality impacts from strip mining-disturbed lands are not fully known. The impact of coal mining on the supply and quality of ground water is not known. Effective land reclamation measures will be demonstrated.

As lead agency for the water quality subtask, EPA will have the primary responsibility for collecting, compiling, analyzing, and writing report material. Coordination and cooperation procedures with other Federal agencies, State agencies, and universities, local interests and industrial and environmental groups will be established for the interchange of information, development of inputs to the study and review and assistance in the plans formulation process. Contracts will be utilized to provide information and assistance in those activities where it is deemed appropriate.

The total allocation of resources for this task is estimated to be 0.43 work years for the remainder of fiscal year 1973, 6.0 work years for 1974, and 7.0 work years for 1975, with $305,000 for contract support.

FIGURE 11A

LONG TERM WATER QUALITY MONITORING STATIONS

MONTANA

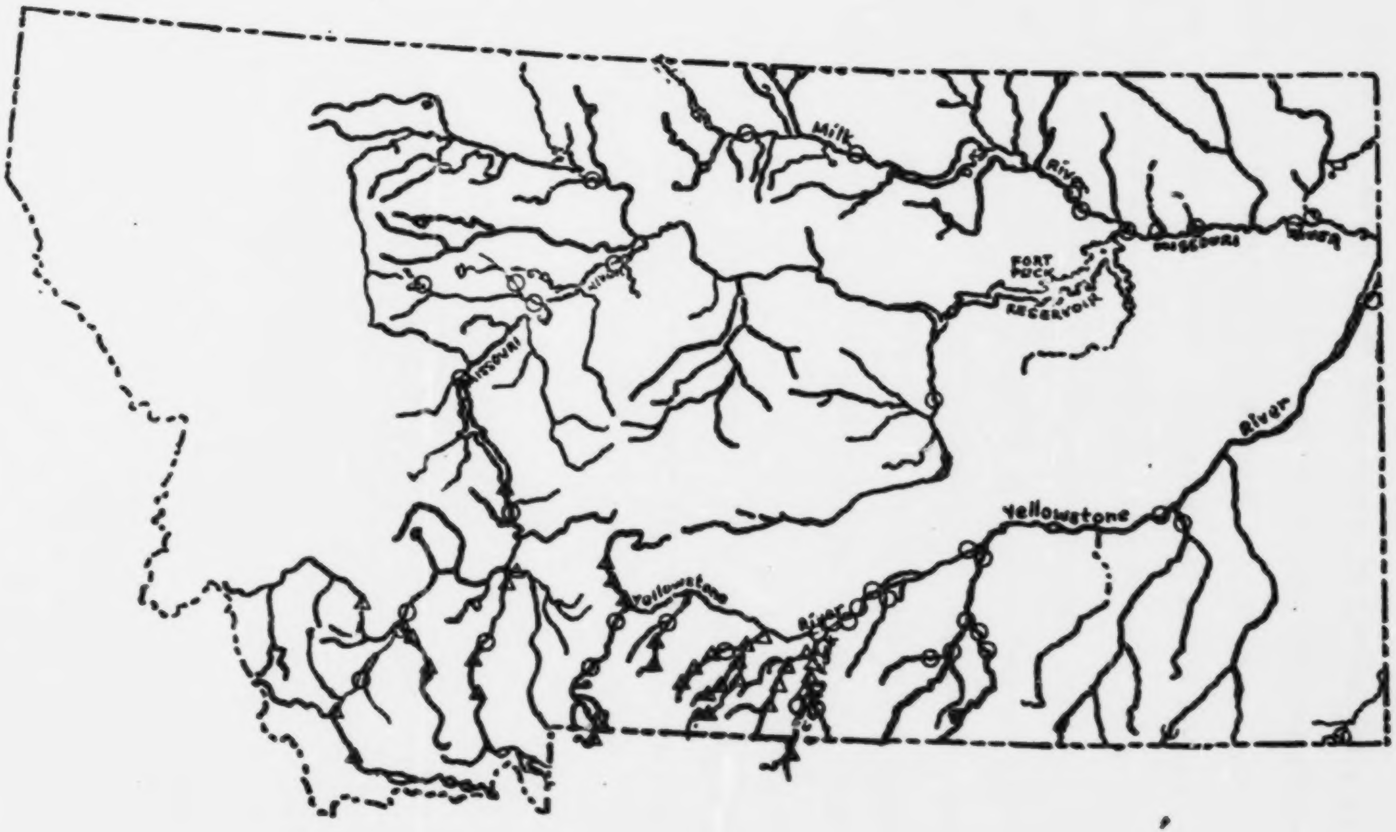

Milk
River
Missouri
River
FORT PECK RESERVOIR
Missouri
River
Yellowstone
River
Yellowstone
River
△ STATE STATIONS
○ FEDERAL STATIONS

FIGURE 11A

FIGURE 11B

LONG TERM WATER QUALITY MONITORING STATIONS

NORTH DAKOTA

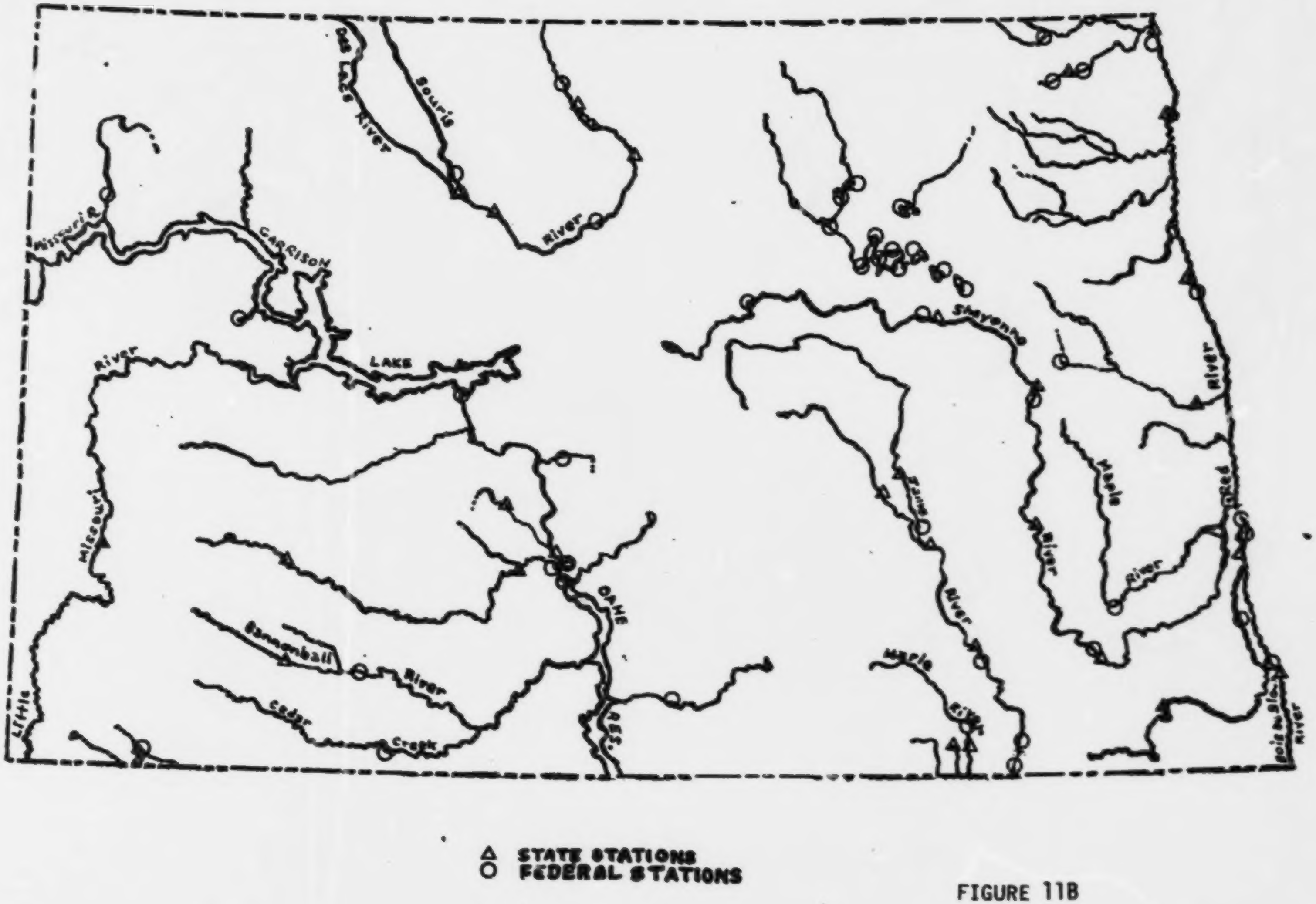

Des Lacs River
Souris
River
Missouri R.
GARRISON
LAKE
River
Missouri
Little
Cannonball
River
Cedar
Creek
OAHE
RES.
Sheyenne
River
James
River
Maple
River
Maple
River
Red
River
Bois de Sioux
River
△ STATE STATIONS
○ FEDERAL STATIONS

FIGURE 11B

FIGURE 11C

LONG TERM WATER QUALITY MONITORING STATIONS

SOUTH DAKOTA

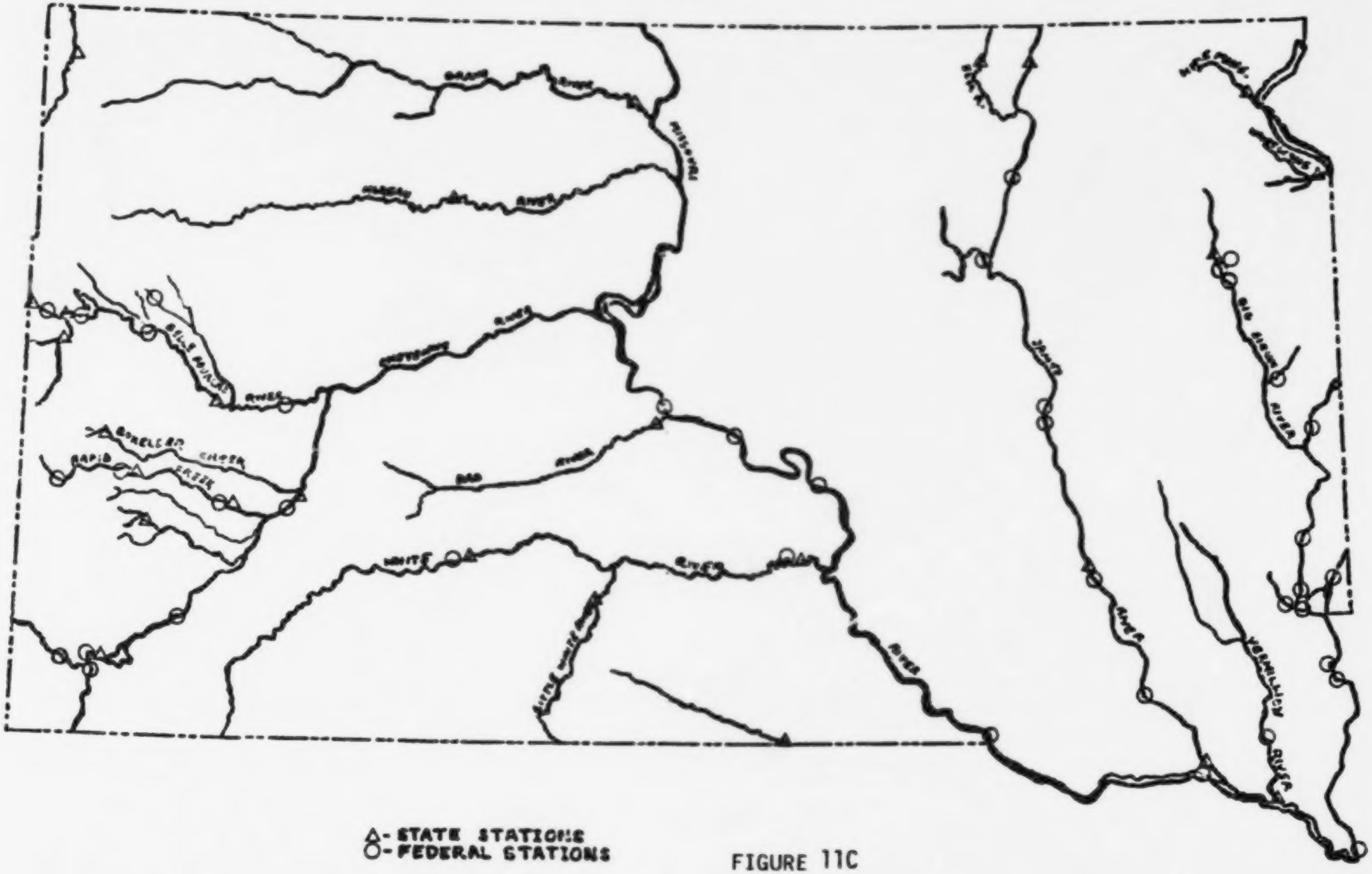
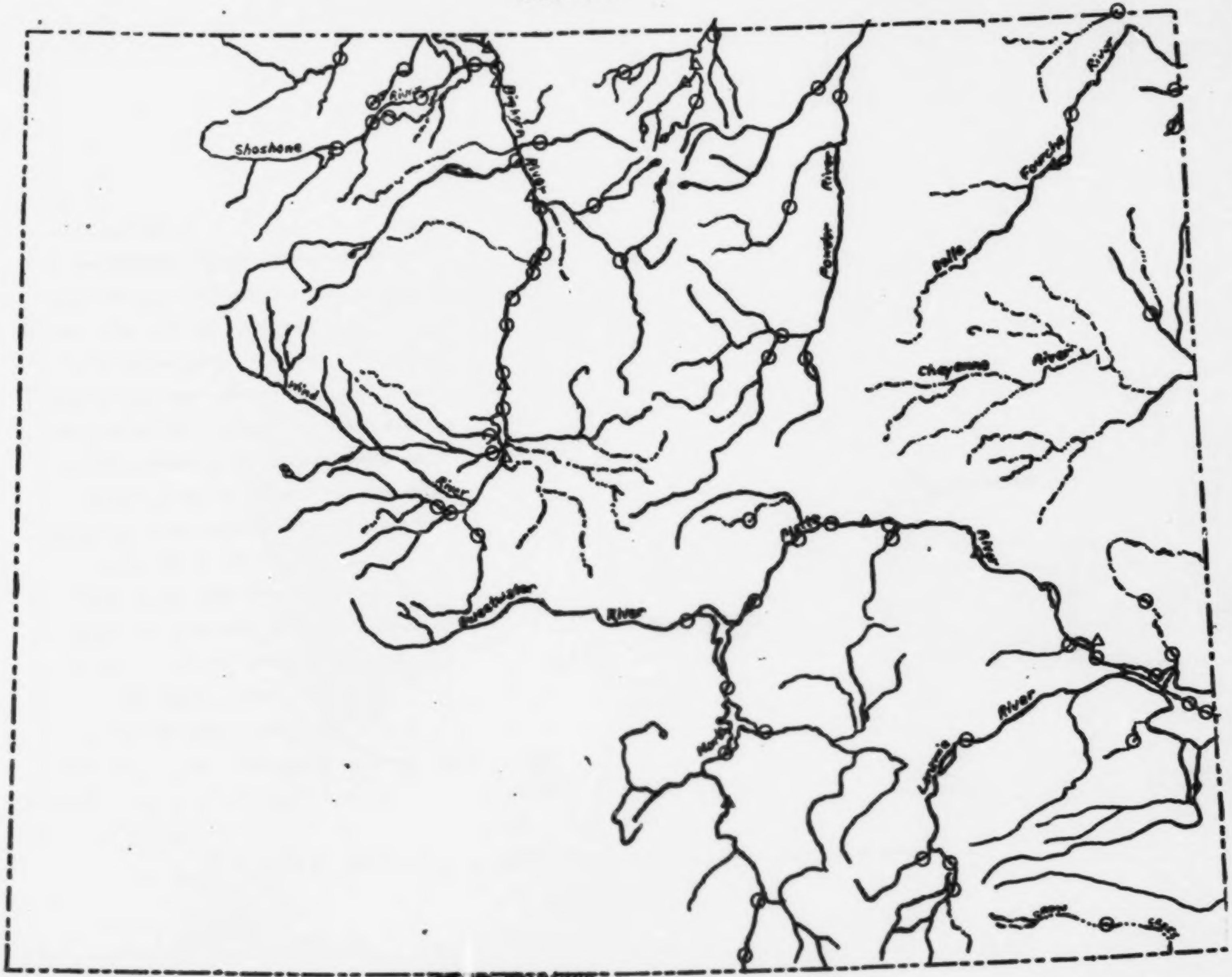

GRAND RIVER
MOREAU RIVER
MISSOURI
BELLE FOURCHE RIVER
CHEYENNE RIVER
BOXELDER CREEK
RAPID CREEK
BAD RIVER
WHITE RIVER
RIVER
ELM R.
JAMES RIVER
BIG SIOUX RIVER
VERMILLION RIVER
△- STATE STATIONS
○- FEDERAL STATIONS

FIGURE 11C

LONG TERM WATER QUALITY MONITORING STATIONS
WYOMING


Shoshone
River
Bighorn
River
Powder
River
Wind
River
Sweetwater
River
Platte
River
North Platte
Laramie
River
Belle
Fourche
River
Cheyenne
River

△STATE STATIONS
○FEDERAL STATIONS

FIGURE 11D

Table C. Northern Great Plains Resource Program - EPA Region VIII Accomplishment Plan

Task: Water

Activity	FY 1973	FY 1974	FY 1975	FY 1976
1. Water quality lead -- participate in overall water activities and plans formulation. (Environmental Planner - Reg.)	1/3	1/3	1/3	
2. Inventory surface and ground water quality. Inventory of discharges: point and non-point. Augment regional support (2 my) by contract. (Water quality surveillance - Reg.)	(specialist from mine hydrology study) rec'd 30,000 H₂O 5,000 Trace	1/2 Contract for analytical work - ~~$80,000~~ $10,000 [illegible] $35,000 ✓30,000 ✓15,000 25,000 $70,000	1/2 / Sampling & data collection Fed/State Biological Trace element analyses Groundwater - inventory, sampling baseline ($5,000 of $[illegible] received)	
3. Determine future effluents, types of treatment, process modifications, and water use alternatives. Evaluate secondary growth impacts (population, construction, etc.) on water quality of area and evaluate mitigation needs. (Reg./Hqs./NERC-Corvallis) (possible extension of permits effluents guidelines contract). Requires power plant control technology expertise (Cooling: NERC-Corvallis) in addition to environmental engineering/economic analysis expertise (Reg.).		1/2 D. Cooling [illegible] $50,000 Engineering/economic analysis $25,000	3 (1/2 Hqs. 1 NERC-Corvallis)	

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Table C (Continued)

Activity	FY 1973	FY 1974	FY 1975	FY 1976
4. Project surface water quality including modeling contracts and assistance. Evaluate water in terms of suitability of use (process use/reclamation of strip mine use). Evaluate possible mine drainage. (Reg./Hqs.). Requires water quality/hydrology modeling expertise such as a water resource planner. (Reg.) Preliminary plan is to attempt to adopt the U. S. Bureau of Reclamation model on the Colo. River to the Mo. River. Contract for this work will be with USGS, who developed the model, and will be used for broad region-wide analyses (USGS - $15,000). A model will also be developed for a detailed water quality analysis in areas of primary impact. This project will be by contract and will include collection of data to verify model (contract - $150,000).		1/4 15,000 Thermal impact on reservoirs ($15,000)	3/4 (Adaption of B/R model - $15,000 - USGS) (Water quality model - $150,000)	

$35,000

$50,000 vegetation + soils trace metal analysis

Table C (Continued)

Activity	FY 1973	FY 1974	FY 1975	FY 1976
5. Aid in defining instream needs; i.e., minimum stream flows (Reg./Hqs.). Contract to define biological needs. Requires biologist for ecosystem analysis and engineering/modeling skills for non-biologic needs. (Water rescurce planner - Reg.) (Environmental Impact Analyst - Hqs.)	$5,000,000 for 50% in instream needs.	1/2 ~~(Contract - $75,000)~~ See #2 for additional needs.	1/4 1/4 (Hqs.) 70,000 match to Interior for modeling	
6. Evaluate impact on groundwater. Contract - investigate subsurface effects of cooling ponds at two existing plants. (Requires geo/hydrologist at regional level.)		1/4	1/4 ($100,000 - 50% match to USGS.)	
7. Analyze impacts of transbasin diversions on quality of water and environmental effects in areas of origin, including Colorado River Basin. (Water Resources Planner - Reg.)		1/4	1/4	
8. Evaluate physical/economic detriments to water user in Missouri River Basin from increased salinity. Contract - to develop feasibility of a simulation and economic impact assessment model. (Economist - Reg.)		1/4 1/4 ~~(Contract - $15,000 for~~ feasibility of econ. study.) Out	1/4	

Table C (Continued)

Activity	FY 1973	FY 1974	FY 1975	FY 1976
9. Evaluate environmental detriments associated with water resource construction projects (dams, reservoirs, canals, pipelines, etc.). Coordinate with findings from other work groups, i.e., surface resources. (Requires water resources engineering/hydrology and biological expertise; e.g., Environmental Impacts Analyst - Reg.)		1/4	1/4	
10. Coordinate with other work groups on mass-balance analysis on coal burned. Evaluate water resource aspect of mass-balance analysis. Contract as set up with other work groups. (Industrial Wastes Engineer - Reg.)		1/4 (Contract - $50,000 for water analysis.)	1/4	
11. Secretarial Support, Drafting and other Technical Support.	1/10	1-1/3	1-1/3	
TOTALS:	0.43	6.0	7.0	(-0-)
(Secretarial)	(1/10)	(1-1/3)	(1-1/3)	(-0-)

B 190,000 Contract Funds
205,000 Now requested
15,000 Additional from orig. request

230,000
50

5. Task Group for Subject Area D - "Atmospheric Aspects"

This Task Group will coordinate the various research efforts proposed or underway in the study area which relate to ambient air quality. Contact will be made with governmental agencies, universities, environmental groups, and pertinent industries to inform them of the objectives of the NGPRP, more specifically the Atmospheric Aspects Task Group, and to request their cooperation and participation. It is hoped that much of the ongoing research effort can be incorporated into a comprehensive study.

In addition to coordinating research efforts, the Task Group will acquire the data necessary for evaluating alternative strategies for resource development. Existing air quality monitoring efforts will be supplemented to provide baseline data describing the existing air quality. Visibility will also be measured for various meteorological situations. The meteorological data now being collected in the study area will be supplemented with aircraft soundings and wind data from towers and balloons. A mass-balance analysis of the coal burned in the study area will be made for different types of coal and control equipment. This work group will obtain stack sampling results and coordinate with the other Task Groups (Mineral Resources and Water) to complete the analysis.

The Atmospheric Aspects Task Group will assimilate information on air pollution control technology for the types of facilities which may be considered in the resource development of the study area. This type of information will be used in considering constraints in developing alternative strategies and for diffusion modeling.

The task group will perform atmospheric diffusion modeling for the various alternative strategies which are developed by the NGPRP. This modeling will be used to evaluate the potential impact of various resource development strategies and to indicate other possible considerations that need further study. The diffusion modeling will also provide guidance to the State agencies which have requested assistance in this area.

The total allocation of resources for this task is estimated to be 0.37 work years for the remainder of fiscal year 1973, 4.0 work years for 1974, 3.0 work years for 1975, 5.25 work years for 1976, with $318,500 and $50,000 for contract support for 1974 and 1975, respectively.

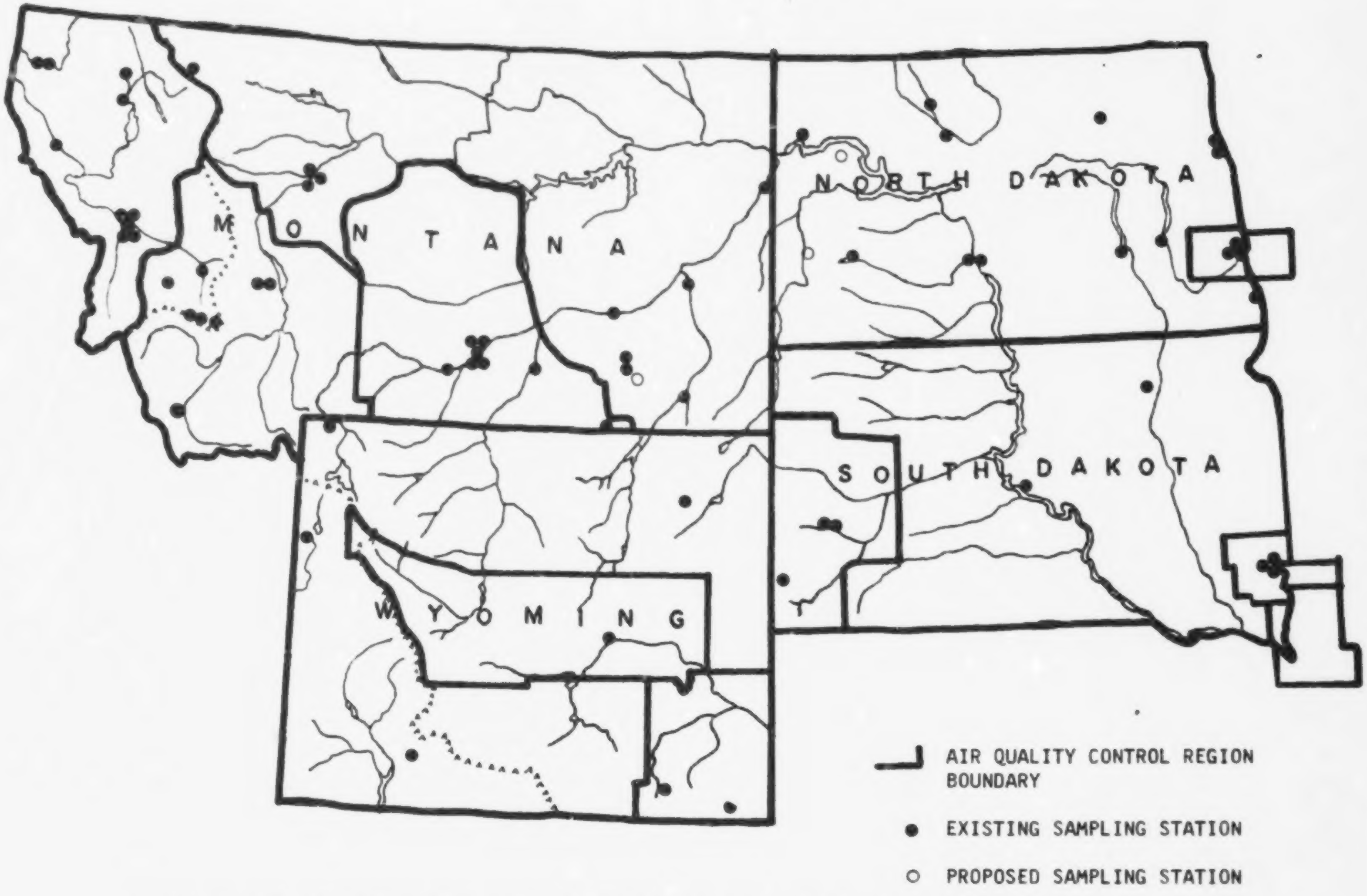

MONTANA
NORTH DAKOTA
SOUTH DAKOTA
WYOMING
AIR QUALITY CONTROL REGION BOUNDARY
● EXISTING SAMPLING STATION
○ PROPOSED SAMPLING STATION

FIGURE 12 AIR QUALITY CONTROL REGIONS AND DATA-GATHERING STATIONS IN NORTHERN GREAT PLAINS RESOURCE PROGRAM AREA.

Table D. Northern Great Plains Resource Program - EPA Region VIII Accomplishment Plan

Task: Atmospheric Aspects

Activity	FY 1973	FY 1974	FY 1975	FY 1976
1. Atmospheric aspects lead: participate in overall air related activities and plan development. (Reg.)	1/8	1-1/2	1	1
a. Development plan for EPA involvement.				
b. Examine related ongoing or proposed studies in study area and try include within framework of NGPRP.				
c. Meet with State and local governmental groups to explain atmospheric aspects portion of NGPRP and solicit their cooperation and assistance.				
d. Invite participation of environmental groups with expertise in this area.				
e. Meet with industrial groups to explain study and solicit support and cooperation.				
f. Coordinate efforts of research on atmospheric aspects of resource development.				

Table D (Continued)

Activity	FY 1973	FY 1974	FY 1975	FY 1976
1. (Continued)				
g. Coordinate activities with other work task groups.		1/2	1/4	
2. Acquire necessary meteorological information for analyses and evaluation (Reg./NOAA).				
a. Temperature soundings (aircraft).		(Contract - $35,000)		
b. Wind data from towers.		(Contract - $12,000)		
c. Wind data from balloons.		(Contract - $60,000)		
d. Existing met. data transformed to proper format.		(Contract - $1,500)		
3. Acquire air quality data for study area (Reg./NERC).		1/5 1/5 NERC-RTP		
a. Supplement existing stations to better cover study area.		(Contract - $60,000)		
b. Analyze samples for trace elements.				
4. Acquire visibility information for study area (Reg./NERC)(NOAA).		3/20 1/20 NERC-RTP	3/20 1/20 NERC-RTP	
a. Review technology for evaluating visibility of rural area.				
b. Development procedure for field work.				

Table D (Continued)

Activity	FY 1973	FY 1974	FY 1975	FY 1976
4. (Continued)				
c. Assess visibility for various meteorological situations.		(Contract - $60,000)		
5. Stack sampling for several locations where existing power plants (Reg./NERC).		1/10 1/10 NERC-RTP (Contract - $90,000)	1/10 1/10 NERC-RTP	
a. Sample plants burning different types of coal.				
b. Sample plants utilizing different types of control equipment.				
c. Analyze sample for trace elements.				
d. Coordinate effort with other work groups to obtain a mass-balance analysis for coal burned.	1/16 1/16 NERC-RTP			
6. Assimilate information on air pollution control options (Reg./Hqs.).		1/10	1/10	
a. Power plants.				
b. Coal gasification plants.				
c. Other.				

Table D · (Continued)

Activity	FY 1973	FY 1974	FY 1975	FY 1976
7. Participate in development of alternative strategies of study areas (Reg.).			1/4	1/4
a. Acquire information on air quality regulations for study area.				
b. Meet with governmental and private groups to determine development planned or anticipated in study area.				
c. Determine that information from (b) is incorporated in development of alternative strategies.				
8. Estimate the impact of resource development on air quality (Reg./NOAA).			1/2 (Contract $50,000)	2
a. Employ NOAA model to make diffusion estimates for various types of possible resource development.				
b. Employ estimates from (a) to study problems of plant sitings.				
c. Examine possible impact on air quality of secondary development (communities, etc.) related to resource development.				

Table D (Continued)

Activity	FY 1973	FY 1974	FY 1975	FY 1976
9. Participate in preparing reports on atmospheric aspects of study.				3/20 1/20 NERC-RTP
a. Interim reports as study progresses (Reg./NERC-RTP/NOAA).				
b. Report on atmospheric aspects of alternative strategies as evaluated (Reg./NOAA).				
10. Participate in Siting Conference scheduled for first full year of study.		1/10		
11. Secretarial Support - Drafting	0.12	1	1	1.5
TOTALS:	0.37	4	3	5.25
(Secretarial)	(0.12)	(1.00)	(1.00)	(1.5)

Table D (Continued)

Summary of Effort

Task	FY 1973	FY 1974		FY 1975		FY 1976	
	MY	MY	Contracts	MY	Contracts	MY	Contracts
1	0.12	1.5		1		1	
2		.5	108.5K	.25			
3		.4	60K				
4		.2	60K	.2			
5	0.12	.2	90K	.2			
6		.1		.1			
7				.25		.25	
8				.50	50K	2	
9						.5	
10		.1					
TOTAL	0.25	3.0	318.5	2.5	50K	3.75	

TYPE OF ASSISTANCE:

Task
1 - Region - (environ. engr. (air), meteorologist)
2 - Region/NOAA - (meteorologists)
3 - Region/NERC (Durham) - (S&A, air monitoring experience, chemist)
4 - Region/NERC/NOAA (Las Vegas) - (meteorologists, atmospheric physicist, environ. engr.)
5 - Region/NERC (Durham) - Air pollution engr., chemist)
6 - Region/OAWP/NERC (Durham) - control engineers
7 - Region - environ. engrs., planner
8 - Region/NOAA - meteorologists, environ. engr., planner
9 - Region/NOAA - environ. engr., meteorologists

6. Task Group for Subject Area E - "Surface Resources"

Task Group E has been assigned the task of quantifying the surface resource values of the NGPRP area in terms of soils, vegetation, wildlife, and the uses of these surface resources. The group is also charged with the task of identifying land ownership. We assume and will strongly urge that this Task Group address the problems of restoration or rehabilitation of mined areas in a comprehensive fashion. The Task Group's work will also include the review of such items as transmission lines and routes. Based upon these assumptions, we have allocated significant resources to this Task Group.

Certain resource requirements of NERC-Cincinnati are listed in Table E as are similarly estimated requirements from NERC-Las Vegas (or the DFI in Denver) in the area of remote sensing.

It will be necessary to insure public participation in the work of this Task Group and to insure that the surface resources are reviewed from an eco-system approach and not from just an economic approach. Agricultural evaluations must review the appropriateness of grazing as well as the extent of and type of grazing. The Task Group must also provide an insight on the management of surface resources.

The total allocation of resources for this task is estimated to be 0.14 work years for the remainder of fiscal year 1973, 1.27 work years for 1974, 1.75 work years for 1975, and 0.06 work years for fiscal year 1976 with $15,000 for contract support.

Table E. Northern Great Plains Resource Program - EPA, Region VIII Accomplishment Plan
Task: Surface Resources

Activity	FY 1973	FY 1974	FY 1975	FY 1976
1. Review of Task Group Work Plans', review of of work products received from Group; general management; meetings; coordination of Task Group Activities with EPA regional coordinator; preparation of data; insurance of public participation; resources inventory - necessitates use of knowledge of ecology, biology and managerial.	1/24	1/4	1/4	
2. Project Officer for demonstration grant to document strip-mine revegetation practices on a 100 acre plot in NGPRP area plus selected plots, analyses, and demonstrations on a smaller scale in geologically, hydrologically, or climatologically different areas. A five-year grant of $500,000 to cover direction, seeding, transplanting, etc., and documentation. Grading to be accomplished by other sources. Includes subsurface water quality monitoring. FY 76-78 would involve continued documentation only. Requires agricultural, forestry, earth sciences, and landscape technical expertise with demonstrated managerial capability.	1/48	1/8 NERC-Cinn. 1/16 ($100,000 grant)	1/8 NERC-Cinn. 1/16 ($100,000 grant)	1/16 ($100,000 grant)

Table E (Continued)

Activity	FY 1973	FY 1974	FY 1975	FY 1976
3. Compilation review, evaluation, and strengthening (if necessary) of legal constraints/leases, permits, rules, regulations, laws, guidelines) existing or needed to, protect, conserve, or restore those surface resources of importance. Requires legal expertise.	1/48	1/12	1/24	
4. Development and implementation of an "ecosystem" approach to the surface resources work plan along with public involvement in identifying and evaluating such systems. Requires "ecologist".	1/48			
5. Design and implementation of a surface resources monitoring system which may be used to monitor the condition of selected surface resources if development of coal continues. May utilize remote sensing and, therefore, support from NERC-Las Vegas, and Hdqtrs. Expertise requirements are variable. Requires knowledge of measurable characteristics of surface resources.		1/12 1/12 NERC - Las Vegas; Hdqtrs. ($15,000 for aerial support)	1/6 1/2 NERC- Las Vegas; Hdqtrs.	Continuing

Table E (Continued)

Activity	FY 1973	FY 1974	FY 1975	FY 1976
6. Provide coordination from the Surface Resources and ecological systems approach to the Siting Conference to be held in the region cosponsored by the NGPRP under the primary leadership of the Atmospheric Aspects Task Group (D). Requires managerial capability.		1/24	1/48	
7. Assistance with the identification and quantification of public attitudes relating to the "development" of surface resources (including the maintenance of the status quo) in and about the NGPRP area. Requires managerial capability.		1/24	1/12	
8. Secretarial - Clerk Typist support and other Technical Support.	1/24	1/2	1/2	
TOTALS:	0.14	1.27	1.75	0.06
("Secretarial")	(0.04)	(0.5)	(0.5)	(-0-)

7. Task Group for Subject Area F - "Socio-Economic and Cultural Aspects"

Task Group F has been assigned the relatively complex task of identifying and quantifying much of the people-related aspects of the Program area as these aspects may control (to the extent of prohibiting) or be controlled by resources (primarily coal) and resource development in the area. In addition to determining present and future public opinion regarding both the current status of development and possible future status of development, this Task Group is considered to include that ill-defined parameter - growth. The Task Group must carefully avoid over-emphasis of economic analyses which, however useful and important, must be viewed on a one-to-one basis with social, scenic, aesthetic, and recreational values, to name a few.

Task Group F will need to coordinate its activities with Task Groups C, D, E, and G, in particular. Task Group F has assumed, at this time, that it will perform a more extensive survey of "Rehabilitation of mined lands" than we envision. We have placed the majority of the rehabilitation (and added "restoration") effort in Task Group E ("Surface Resources").

EPA's involvement will be primarily in the area assisting with and assuring that, the total potential environmental impact is evaluated and that the techniques developed to evaluate impacts are useful to the decision-makers and local interest groups. Much effort may be expended in the process of developing land-use tools that are integrated with the true impact on people. EPA will be involved in the definition of the extent to which impacts outside of the NGPRP area must be considered. Furthermore, EPA must make efforts to determine what are the environmental information needs of the decision-makers and local interest groups. The EPA Task Group "F" representative(s) will help factor these needs back into the socio-economic work plan as well as the programs of other relevant task groups. In addition, the EPA Task Group "F" member will assist in the distribution of output from the task groups to the local interest groups. For example, the Socio-Economic Task Group, meeting in Billings, Montana on 10 April 1973, conferred with the Tribal Council of the Northern Cheyenne Indians. In their attempt to understand the potential impacts of coal mining on their reservation, the Cheyennes identified the need for baseline air and water quality data. The EPA representative has served to insure that Task Groups C and D are aware of this need.

It should be emphasized that Montana has projected a need for considerable effort, perhaps as much as $1,000,000 for up to five years of effort in surveying areas felt to fall within the scope of Task Force F. Thus, EPA must play a major role in coordinating the efforts of the Task Force with Montana and the other states and in making certain that state participation and support of the states' involvement is achieved.

Total allocation of resources by the Region VIII offices, including over-target assignments, is estimated to be 0.08 work years in FY 1973, 0.42 work years in FY 1974, and 0.29 work years in FY 1975.

Table F. Northern Great Plains Resource Program - EPA Region VIII Accomplishment Plan

Task: Socio-Economic and Cultural Aspects

Activity	FY 1973	FY 1974	FY 1975	FY 1976
1. Managerial and coordination role in reviewing work plans and work products of the Task Group. Contact of public and other interest groups who will affect and who will be affected by mineral resources development to provide for quantification of opinions and their values. Requires managerial and socio-economic talent all modified by an active environmental awareness and concern.	1/24	1/8	1/8	
2. Technical assistance in developing methods to produce documents that describe the possible impacts upon people of various development alternatives, including that of no development. Also the development of alternatives to minimize detrimental socio-economic and cultural aspects.		1/8	1/8	
3. Preparation for and participation in the Siting Conference insofar as methods of evaluating socio-economic and cultural aspects are concerned, and as public opinion and polls are concerned, social scientist.				
4. Secretarial Support	1/24	1/24	1/24	
TOTALS:	0.08	0.42	0.29	(-0-)
(Secretarial)	(0.04)	(0.04)	(0.04)	(-0-)

8. Task Group for Subject Area G - "National Energy Considerations"

This Task Group has the primary responsibility for a critical quantification of the national and regional energy demand and the national and regional energy supply situation as this demand and supply situation may exist in the future. It will be necessary for this Group to thoroughly review the accuracy of energy demand projections to document and publicize the reviews, and to give careful consideration to ways and means to reduce the demand. "Historical Perspectives" of energy demand figures must not serve as the only basis for projections of energy demand.

Task Group G will have the tendency to staff with technical experts in fields such as power generation and electrical transmissions, control technology, and the like. This tendency must be countered by a strong dependence upon the other Task Groups for such technical data in order that Task Group G may concentrate on energy supply and energy demand. It is equally important for Task Group G to give equal time to regional energy demands as well as national demands, and to national energy supplies as well as regional energy supplies. Public participation is again critical to the success of the effort.

It is suggested that the regional coordinator for EPA activities in the NGPRP serve as a principal participant in the activities of Task Group G in order, among other items, to insure the appropriate evaluation and presentation of regional considerations and regional perspectives. The work of this Task Group may well become the most important and influential determinant of impact upon both the area of the NGPRP and the region. Therefore, strong representation and participation by the regional office of EPA is considered mandatory. In view of the complex and interrelated issues, it will be necessary for the regional coordinator to call upon most every area of expertise within the region.

It is likely that this Task Group will have to play a prime role in developing and implementing an information dissemination system for the NGPRP data though other Groups would be expected to suggest methods of presenting and otherwise making available the data to decision-making entities. It may be appropriate for Task Group G to perform a substantial portion of the selling and organization of the "Siting Conference" described in the following Section.

The total allocation for this task is estimated to be 0 work years for the remainder of fiscal year 1973, 1.0 work years for 1974, 1.0 work years for 1975, and 0.50 work years for 1976.

Table G: - Northern Great Plains Resource Program - EPA Region VIII Accomplishment Plan

Task: National Energy Considerations

Activity	FY 1973	FY 1974	FY 1975	FY 1976
1. Identification and construction of energy supply projections based upon all resources found in region and summary of energy-supply technologies and their impact.		1/4	1/4	
2. Identification and construction of energy demand projections for sectors, regions, and nation.		1/4	1/4	
3. Analyses of Demand-Supply system, including the system of reducing demand		1/4	1/4	
4. Input to final analyses of consequences.				
5. Secretarial Support		1/4	1/4	1/4
TOTALS:	-0-	1.0	1.0	0.50
("Secretarial")	(-0-)	(0.25)	(0.25)	(0.25)

Siting Conference

It has become apparent that the Northern Great Plains Resource Program should serve as a sponsor of an informational, technical, and public conference covering the complex subject of coal-fired, steam-powered, electric-generating plant siting as such siting pertains to the Northern Great Plains (Montana, North Dakota, South Dakota, and Wyoming). This subject has been treated in the resources allocation for all Task Groups or Subject Areas where EPA input from and EPA participation in the Conference would be expected. But, due to the all-encompassing nature of such a Conference, this separate section has been prepared to express our concern for interest in, and a tentative outline for this Conference.

We envision the Conference as a major one, similar to annual meetings of such national organizations as the American Geophysical Union, the Geological Society of America, the American Institute of Mining, Metallurgical and Petroleum Engineers, the American Association for the Advancement of Science, the American Institute of Electrical Engineers, etc. We propose a three or four day schedule of simultaneous sessions and at least one day-long field trip. The Conference would be comprised of major addresses, invited papers, and public discussions and forums. The Conference proceedings must be published.

We have considered cosponsors to include the States of Montana, North Dakota, South Dakota, and Wyoming; the Federal agencies contributing to the NGPRP; selected Universities; public groups such as the Sierra Club; private groups such as the Edison Electric Institute and the American Public Power Association; and one or more National Professional Organizations. The location of Billings, Montana for the Conference has been briefly discussed. Assuming that the Conference should be held at a time when travel is possible and when Universities are either open or during short vacation periods, we have tentatively scheduled the Conference for the early spring of 1974, though an earlier date, such as the late summer of 1973, would be preferable.

A proposed outline for the Siting Conference is presented in Table H. The outline presents only the possible Session Headings and specific items that may be discussed. The outline does not attempt to schedule simultaneous sessions.

The objectives of this Siting Conference are as follows:

1. To gather technical data that identify the state-of-the-art insofar as control technology, energy conversion technology, mining technology, revegetation technology, predictive techniques, and monitoring are critical to the decision-making process that is to be supported by the NGPRP, and to allow the NGPRP to benefit from these data.
2. To poll both the public sector and the technical sectors on their attitudes regarding resource development in the area of the NGPRP and to document these attitudes for the benefit of those who must make decisions regarding coal and other

resources development.

3. To present the work of the NGPRP Staff as it exists to date.
4. To develop a power plant siting philosophy and criteria therefor which begins to identify the many options existing and methods to predict and evaluate the impacts, both direct and secondary impacts.
5. To define the options or decisions inherent in energy supply and demand projections and to evaluate such options and the means to both measure and improve predictions of energy demand.
6. To publish the papers presented and summaries of discussions held.

Table H - Northern Great Plains Resources Program - EPA, Region VIII Accomplishment Plan

Task: Siting Conference - Proposed Outline

I. General Session

  A. Keynote Address(es)

    Problems of states relating to coal development and power production.

    Problems of Regions relating to coal development and power production.

    Problems of Nation relating to coal development and power production.

  B. Northern Great Plains Resources Program (NGPRP)

    Objectives & Participants.

    Accomplishments to date.

    Future Actions.

  C. Purpose of Conference

II. Available Mineral and Surface Resources in NGPRP Area

  A. Energy Fuels - identify, quantify, and evaluate

  B. Other Mineral Resources - identify, quantify, and evaluate

  C. Surface Resources including scenic values, recreational values, fish & wildlife - identify, quantify, and evaluate

  D. Ecosystem - Type Evaluation of interactions between resources if selected developments occur

  E. Mining Methods

Table H (Continued)

- III. Atmospheric and Meteorological Aspects of Coal-fired Power Plant Siting
  - A. Present Air Quality - including visibility
  - B. Climatology and Meteorology - prevailing patterns and modeling
  - C. Emissions - including steam
    - 1. Health and legal consideration.
    - 2. Present and future quality and control technology.
    - 3. Other energy conversion processes and gaseous emissions.
    - 4. Monitoring and chemical analysis.
    - 5. Modeling.
    - 6. Secondary impacts.
  - D. Ongoing State, Federal and institutional activities
- IV. Subsurface and Surface Water Resources and Aspects of Power Plant Siting
  - A. Present water quality and quantity and use
  - B. Effluents
    - 1. Water use and options.
    - 2. Present and future quality and control technology.
    - 3. Other energy conversion processes and liquid effluents.
    - 4. Secondary impacts.
    - 5. Legal considerations and health implications.
  - C. Ongoing State, Federal and institutional activities

Table H (Continued)

V. Land-Use Considerations (See also II)

1. Choices, legal constraints or guidelines, public desires.
2. Restoration and rehabilitation of disturbed areas.
3. Alternative methods of resources extraction.
4. Future land uses.

VI. Socio-Economic Considerations

1. Economics of region and solutions.
2. Economics of coal developments - Mine-mouth plant vs. transport.
3. Social and cultural impacts.
4. Associated and secondary growth.
5. Recreational values.

VII. Environmental Synergisms

1. The integrated impact on people, wildlife, air, water, vegetation, etc.
2. The National Environmental Policy Act.
3. Methods of predicting and analyzing the integrated impact.

VIII. Public Forum

Somewhat "Free-Form" series of written statements and formal discussions interspersed with informal work shops conducted by chain people and Recorders.

IX. Legal and Regulatory Constraints

A power plant siting law.

State laws and regulations - proposed and existing.

Table H (Continued)

X. Energy Production and Transmission Techniques and Potential
    A. Geothermal
    B. Nuclear
    C. Gasification
    D. MHD
    E. Solar
    F. Transmission
    G. Water
    H. Research needs

XI. Summary Session - Siting Criteria

What criteria, how evaluated, who regulates, economics, public involvement.

XII. Energy Demands and Supply
    A. Regional
    B. National
    C. How shall the two coexist

XIII. Field Investigations

(Field trip(s))

V. Summary

This Accomplishment Plan has been prepared to serve as a guide for the Region VIII offices of the Environmental Protection Agency as the Northern Great Plains Resource Program progresses. The Program was precipitated by the increased activity occurring in Montana, North Dakota, South Dakota, and Wyoming associated with the extraction and utilization of "low sulfur" coal. The Program is designed to procure and develop information that can assist in either developing the coal resource or restricting such development, depending upon the outcome of comparisons of the desired and projected results of "development."

Since mining and burning of some 50 x 10^9 metric tons of strippable coal from the sparsely populated area of the Northern Great Plains would significantly alter the environment, the EPA must assure that those responsibilities delegated to it, especially the responsibilities to prevent pollution, to assist the States, and to involve the public, are incorporated in the decision-making process that is the forerunner of large-scale mining. Though 5 x 10^5 hectares of land are essentially committed to coal mining in the Northern Great Plains, the area affected could increase by two orders of magnitude. Fortunately, a moratorium has been placed on issuance of Federal Prospecting Permits. Few power plants of size have been established in the area, though one study projects as many as forty-two new coal-fuel steam-electric plants in the coal-rich area. The time to evaluate the proposed development is now.

The Northern Great Plains Resource Program provides the framework within which EPA can discharge its responsibilities while making maximum use of other Federal, State, and local resources. The Program also gives the framework to evaluate coal in light of and as it affects other resources, including the reserves of other energy fuels contained in Region VIII.

This Accomplishment Plan has, therefore, identified resources that should be assigned to numerous and various tasks that are both part of the Northern Great Plains Resource Program and which EPA is directed to address by its statutes. EPA resources have been identified through fiscal year 1976. Regionally-coordinated efforts are estimated to require about thirty work years of effort and about $900,000 for contracts, grants, and minor equipment through 1976. Table S-1 summarizes the allocations. Note that the regionally-coordinated effort includes those NERC efforts conducted for the region (Table S-2). A first estimate of Headquarters allocations has also been made (Table S-3). Table S-4 summarizes the secretarial and drafting type of support identified.

The Headquarters allocation is based upon the tentative identification of individuals who either themselves or through their staffs will participate in the Program effort (see Table S-1). These efforts will be largely conducted without regional coordination.

It is important to note that those familiar with similar efforts, including EPA's efforts in Interior's Oil Shale Program, are convinced that the position of regional coordinator is critical to the successful implementation of EPA's role in the Northern Great Plains Resource Program, and that the ability of this coordinator to accurately weigh the many factors extant in such a series of dilemmas is required.

The total regional resource allotment for the Program has been estimated to be 16.19 work years for FY 1974, 15.56 work years for FY 1975, 7.01 work years for FY 1976, and $898,500 in contract funds, excluding a revegetation/reclamation grant, for all three years (calculated from Table S-1 - Table S-2 + Table S-4).

While the Program is designed to be completed in fiscal year 1975, we have identified a need to prolong certain of the more critical programs into fiscal year 1976. Of course, many intermediate points in time would occur when data were supplied to other groups for use. On the other hand, it is envisioned that certain of the activities herein specified will continue long after the Program is closed out. These activities either are or will become integrated with Region VIII's continuing effort.

Table S-1. Northern Great Plains Resource Program - EPA Region VIII Accomplishment Plan

Resource Allocation Summary

Task Group Subject Area	FISCAL YEAR 1973 (Apr - Jun)					FISCAL YEAR 1974				
	Regionally-Coordinated Effort		Hqs. Effort		Contract Funds	Regionally-Coordinated Effort		Hqs. Effort		Contract Funds
	Work Years	Salary, Support	Work Years	Salary, Support		Work Years	Salary, Support	Work Years	Salary, Support	
RC - Regional Coordination	0.25	$ 6,250	0.35	$ 8,750	--	0.88	$ 22,000	1.5	$ 37,500	$ 35,000
A - Regional Geology	0.04	1,000	--	--	--	0.08	2,000	--	--	--
B - Mineral Resources	.15	3,750	0.05	1,250	--	1.21 (Incl. 0.19 NERC-Cinn. & 0.05 NERC-RTP)	30,250	0.5	12,500	50,000
C - Water	.33	8,250	0.05	1,250	--	4.66	116,500	0.75	18,750	190,000
D - Atmospheric Aspects	0.25 (Incl. 0.06 NERC-RTP)	6,250	0.05	1,250		3.00 (Incl. 0.25 NERC-RTP)	75,000	1.25	31,250	318,500
E - Surface Resources	0.10	2,500	--	--	--	0.77 (Incl. 0.12 NERC-Cinn; 0.08 NERC-LV)	19,250	--	--	15,000
F - Socio-Economic and Cultural Aspects	0.04	1,000	--	--	--	0.38	9,500	0.25	6,250	--
G - National Energy Consideration	--	--	0.10	2,500	--	0.75	18,750	1.5	37,500	--
TOTALS:	1.16	$29,000	0.6	$15,000	-0-	11.73	$293,250	5.75	$143,750	$608,500

Explanation: "Work Years" includes only 'professional' effort. Secretarial and drafting support plus minor expenditures are included, along with professional salaries, in "Salary, Support" in terms of dollars only.

Table S-1 (Continued)

Task Group Subject Area	FISCAL YEAR 1975					FISCAL YEAR 1976				
	Regionally-Coordinated Effort		Hqs. Effort		Contract Funds	Regionally-Coordinated Effort		Hqs. Effort		Contract Funds
	Work Years	Salary, Support	Work Years	Salary, Support		Work Years	Salary, Support	Work Years	Salary, Support	
RC - Regional Coordinatio	0.75	$ 18,750	1.5	$ 37,500	--	0.5	$ 12,500	0.7	$17,500	--
A - Regional Geology	0.08	2,000	--	--	--	--	--	--	--	--
B - Mineral Resources	1.15 (Incl.0.19 NERC-Cinn. 0.05 NERC-RTP)	28,750	0.5	12,500	25,000	--	--	--	--	--
C - Water	5.66 (Incl. 1.0 NERC-Corv.)	141,500	0.75	18,750	115,000	--	--	--	--	--
D - Atmospheric Aspects	2.5 (Incl.0.15 NERC-RTP)	62,500	1.25	31,250	50,000	3.85 (Incl.0.15 NERC-RTP)	96,250	--	--	--
E - Surface Resources	1.20 (Incl.0.12 NERC-Cinn. 0.50 NERC-LV)	30,000	--	--	--	0.06	1,500	--	--	$100,000
F - Socio-Economic and Cultural Aspects	0.25	6,250	0.25	6,250	--	--	--	--	--	--
G - National Energy Consideration	0.75	18,750	1.5	37,500	--	0.25	6,250	0.5	12,500	--
TOTALS:	12.34	$308,500	5.75	$143,750	$190,000	4.66	$116,500	1.2	$30,000	$100,000

Explanation: "Work Years" includes only 'professional' effort. Secretarial and drafting support plus minor expenditures are included, along with professional salaries, in "Salary, Support" in terms of dollars only.

Table S-2. Northern Great Plains Resource Program - EPA Region VIII Accomplishment Plan

National Environmental Research Centers (NERC) - Allocation Summary

Task Group Subject Area	FISCAL YEAR 1973 (Apr-Jun)		FISCAL YEAR 1974		FISCAL YEAR 1975		FISCAL YEAR 1976	
	Name	Work Years	Name	Work Years	Name	Work Years	Name	Work Years
RC - Regional Coordination	--	--	--	--	--	--	--	--
A - Regional Geology	--	--	--	--	--	--	--	--
B - Mineral Resources	--	--	NERC-Cinn NERC-RTP	0.19 0.05	NERC-Cinn NERC-RTP	0.19 0.05	--	--
C - Water	--	--	--	--	NERC-Corv	1.00	--	--
D - Atmospheric Aspects	NERC-RTP	0.06	NERC-RTP	0.25	NERC-RTP	0.15	NERC-RTP	0.15
E - Surface Resources	--	--	NERC-Cinn NERC-LV	0.12 0.08	NERC-Cinn NERC-LV	0.12 0.50	--	--
F - Socio-Economic and Cultural Aspects	--	--	--	--	--	--	--	--
G - National Energy Considerations	--	--	--	--	--	--	--	--
TOTALS		0.06		0.69		1.91		0.15

Table S-3. Northern Great Plains Resource Program - EPA Region VIII Accomplishment Plan

Tentative Identification of Headquarters Resources to be Assigned to the Program

Task Group Subject Area	FISCAL YEAR 1973 (Apr-Jun)		FISCAL YEAR 1974		FISCAL YEAR 1975		FISCAL YEAR 1976	
	Name*	Work Years	Name*	Work Years	Name*	Work Years	Name*	Work Years
RC - Regional Coordination Headquarters	E. B. Royce Steve Plotkin Staff Support	0.15 0.10 0.10	E. B. Royce Asst.Admin.Plng.Mgmt. Robert C. Scott** Staff Support	1.00 0.20 0.10 0.20	E. B. Royce Asst.Admin.Plng.Mgmt. Staff Support	1.00 0.25 0.25	E. B. Royce Asst.Admin.Plng.Mgmt. Gordon Everett Staff Support	0.20 0.10 0.10 0.30
A - Regional Geology	--	-	--	-	--	-	--	-
B - Mineral Resources	Val Grey Staff Support	0.02 0.03	Val Grey Edgar Pash Staff Support	0.25 0.13 0.12	Val Grey Edgar Pash Staff Support	0.25 0.13 0.12	---	-
C - Water	Staff Support	0.05	Jack Churchill Staff Support	0.10 0.65	Jack Churchill Staff Support	0.10 0.65	--	-
D - Atmospheric Aspects	Fred Lawrence David Shearer	0.02 0.03	Fred Lawrence David Shearer Bob Neligan Bill Jordan	0.30 0.30 0.65 0.15	Fred Lawrence David Shearer Bob Neligan Bill Jordan	0.30 0.30 0.65 0.15	--	-
E - Surface Resources	--	-	--	-	--	-	--	-
F - Socio-Economic and Cultural Aspects	--	-	Staff Support	0.25	Staff Support	0.25	--	-
G - National Energy Consideration	Steve Plotkin Gordon Everett Staff Support	0.02 0.05 0.03	Steve Plotkin Robert C. Scott** Gordon Everett Staff Support	1.00 0.05 0.20 0.25	Steve Plotkin Robert C. Scott** Gordon Everett Staff Support	1.00 0.05 0.20 0.25	Steve Plotkin Gordon Everett -- Staff Support	0.20 0.10 - 0.20
TOTALS		0.60		5.90		5.90		1.20

*May include efforts by persons supervised by named individual.
**Region IX personnel.

Table S-4. Northern Great Plains Resource Program - EPA Region VIII Accomplishment Plan

Secretarial, Typing, and Drafting Support Summary (for Region)

Task Group Subject Area	FISCAL YEAR 1973 (Apr-Jun)	FISCAL YEAR 1974	FISCAL YEAR 1975	FISCAL YEAR 1976
	Work Years	Work Years	Work Years	Work Years
RC - Regional Coordination	--	0.75	0.75	0.50
A - Regional Geology	--	--	--	--
B - Mineral Resources	0.04	0.50	0.50	--
C - Water	0.01	1.34	1.34	--
D - Atmospheric Aspects	0.12	1.00	1.00	1.50
E - Surface Resources	0.04	0.50	0.50	--
F - Socio-Economic and Cultural Aspects	0.04	0.04	0.04	--
G - National Energy Considerations	--	1.00	1.00	0.50
TOTALS	0.25	5.13	5.13	2.50

APPENDICES

APPENDIX 1	OUTLINE OF PLAN - NORTHERN GREAT PLAINS RESOURCE PROGRAM
APPENDIX 2	REGION VIII RECOMMENDATIONS ON PUBLIC INVOLVEMENT AND PARTICIPATION IN THE NGPRP
APPENDIX 3	REQUESTS FOR ASSISTANCE
APPENDIX 4	EPA STATUTORY AUTHORITY FOR NGPRP PARTICIPATION

APPENDIX 1

OUTLINE OF PLAN

NORTHERN GREAT PLAINS RESOURCE PROGRAM

Introduction

The Northern Great Plains, an area which consists of large segments of Montana, Wyoming, North Dakota, South Dakota, and Nebraska, has been the focus of increasing attention because the area is a potential source for vast amounts of relatively low sulfur coal. Interest in the development of the Northern Great Plains coal resources stems primarily from the continuing growth of national energy consumption and increasing emphasis on improved urban air quality. The possibility of large scale development of the coal reserves has, at the same time, heightened regional concern for effective land use and resource planning; including such issues as environmental quality, mined area reclamation competition for scarce water resources, development of other mineral resources, and potential effects on the people and economies of the Northern Great Plains States.

The local, state and Federal governments which make land use and resource planning decisions affecting the area face competing economic, social, and environmental alternatives. The Federal government continues to make decisions regarding leasing schedules for coal resources on public and Indian lands, regulations for air and water quality, and development of water projects. Congress is considering several measures related to surface mining. The States also are concerned with resource development; many have considered or taken legislative action related to surface mining and have prepared State Implementation Plans for air quality under the Clean Air Act. Local governments promulgate zoning and land use plans, and provide for essential public services. Regional Commissions for economic development and water supplies share similar concerns and responsibilities. Local, state, regional, and national interests are not well coordinated at this time.

These factors have led the five States, the Old West Regional Commission, and several Federal agencies to cooperatively initiate the Northern Great Plains Resource Program (NGPRP). This document sets forth the objectives, design outline and organization of the program.

Objectives

The primary objective of the NGPRP is to provide an analytical and informational framework for policy and planning decisions at all levels of government. The end result is intended to be a decision-making tool for Federal, State and local interests who together must plan and manage the area's land and natural resources.

The principal issue concerns the development, or nondevelopment, of land resources within the Powder River and Fort Union areas. Particular emphasis is placed on coal resources. The program will provide data and analytical methodology, including the development of appropriate models, to demonstrate the economic, social and environmental consequences of various courses of action. The program will present both quantifiable and nonquantifiable implications of alternative land and resource uses. The final report will not recommend a particular development plan for the region, rather, it will provide adequate information on the balancing of values and net benefits of alternative plans to guide development of a coordinated Federal-State plan.

The second objective is to encourage the organization of ad hoc institutional entities that will bring together all facets -- local, State and Federal -- concerned with collection and interpretation of information which will affect the future development and quality of the region. It is anticipated that this will lead toward a coordinated planning program for the entire region. The organization would draw from existing State-Federal mechanisms for socio-economic planning in the region, such as State planning groups, Title V Commission, and appropriate River Basin Commissions. Policy and decision-making authority must be retained by established agencies, organizations, and the State and local entities. The NGPRP will contribute in every possible way to encourage this coordination.

A third objective is provision of a coordinating link between data collection, research, planning and operational resource management activities that exist within many different organizations. Such a link should assure rapid interchange of technology and methodology between individual programs associated with the NGPRP.

Scope and Guidance

All analyses will deal with the implications of proposed resource management actions for the five-state area. Although focus will center on the study area, and particularly Powder River and Fort Union resources, the program will adopt whatever appropriate perspective for each subject of analysis. For example, analysis of energy requirements will consider the national energy situation and its principal geographic components, as well as other demands for Great Plains coal.

Thus, an alternative to delayed development of coal or other minerals will be considered in relation to impact on the local economy, as well as impact on the esthetic and cultural values of the region, and relation to the National energy situation. Likewise, in considering energy development cases, analyses of air quality, for example, will include implications of electrical generation in distant urban areas as opposed to generation in the study area, as well as the relative effects of each on local air quality. These two examples are meant to illustrate the wide range of concerns within the NGPRP.

The program will foster integrated consideration of basic natural resource use and protection, including human interests and economic and social development. It will consider the full range of economic, social, and environmental consequences of alternative plans of land and resource management in the region. The accumulation of knowledge and analysis techniques has implications which extend beyond the study area and into other areas of the country that are confronted with similar problems. The resultant data may become a model for future studies or programs concerned with resources in other areas.

To the fullest possible extent all concerned entities will have the opportunity to participate in the design and implementation of the program. Vehicles for participation and use of study results will include frequent reports, regular briefings of broad-based advisory personnel, direct participation in work groups when appropriate, and the periodic assembly of policy officers from involved local, State and Federal agencies, concerned individuals, and representatives of special interest groups, to discuss issues, alternatives, and possible joint regional policies.

The program will provide an objective display of data and analysis to allow a user to draw conclusions based on his particular value system.

The Program

The NGPRP will consist of a series of investigations and studies dealing with a common theme, rather than a single area of concern. The over-all study will be time-phased and, although a comprehensive final summary report will be issued, study results will be reported as they are completed. A schematic of the timing sequence is shown in Figure 1; specific dates and tasks are not included; that will be one of the study's first steps. Frequent and timely reporting will provide maximum assistance to decision-makers on issues which often cannot be delayed until a full, final report is issued.

The program has five principal sections: (1) program design, (2) regional profile, (3) constraints and alternate strategies, (4) analyses of consequences, and (5) preparation of a final report.

1. Program Design. The first step of the program will be to submit this preliminary outline to other Federal agencies, States, industry, and interested citizens for review. The preliminary outline will then be expanded into a Program Design document which will discuss at length the nature of the data and methodology to be used, and will elaborate on the tasks and structure of the effort.

The draft Program Design will then be reviewed with other Federal agencies, States, regional commissions, and the public. Such review should be expedited, but data collection and the assessment and development of analytical techniques can begin simultaneously. Comments on the draft Design will be further solicited directly from interested parties through the mechanism of Advisory Committees (discussed below under Organization), and the Program Design will be the basis for an expression of views if public hearings are held. Final approval of the Program Design will be the responsibility of the Program Review Board.

The Program Design should be an evolving document rather than a fixed statement or work plan. The Program Management Team will continually modify its concepts, and refine ideas and tasks on the basis of experience gained and suggestions from co-workers and users during the course of the study.

2. Regional Profile. Data will be collected and analyzed on: (a) physical characteristics of the region, (b) resources, such as minerals and fuels, wildlife and fisheries, scenic and recreational areas, timber, agricultural products and water -- including their location, current use, ownership and control, (c) present baseline environmental quality, including data on solid waste generation and disposal, (d) regional infrastructure, (e) population density, distribution, and character, (f) regional social and economic attitudes, and (g) past and present activity. In short, complete ecological, natural resource, social, and economic inventories will be developed, as specified in the Program Design phase. Inventory will begin with a review of the available data, will identify gaps and then recommend collection of data to fill those gaps. As data are gathered, they will be published. Preliminary investigations should examine the need for maps to display land use and ownership, water, minerals, and other resources.

3. Constraints and Alternative Strategies. To provide a basis for judging the feasibility of development and management alternatives,

it will be necessary to identify and evaluate legal, institutional, social, economic, environmental, and physical constraints on resource development and management. The analysis of physical constraints will include, for example, the need to commit or divert a resource such as water, for the development of coal. Existing arrangements may limit the extent to which this can be done.

As such constraints are identified, findings will be fed into other program elements to avoid duplication. This will be accomplished by continual monitoring of all tasks by the Program Management Team. Some of this monitoring and feedback also will be a function of the Technical Advisors. These studies should also identify development stimuli. (See following section on Organization.) Because this is the phase of the study in which exercise of judgment is inevitable and the possible loss of objectivity is most likely, it may prove to be most crucial. It is, in effect, an inventory of institutions and attitudes. The relevant institutional constraints are readily identified -- The Clean Air Act, National Environmental Protection Act, mine reclamation laws, regional water compacts, mineral leasing laws, other related State and Federal laws, land ownership, and the like. Equally important are economic and social constraints on resource management alternatives. A variety of attitudes and views must be surveyed and considered.

The output of the constraints section would be, in effect, an identification of potential issues and an improved definition of alternative goals, such as maximum contribution to the solution of the U.S. energy problem. The analysis may help redefine specific goals consistent with the requirement that the NGPRP study not select a single goal or system of values, and thus prejudge results.

To produce more detailed analyses of the implications of resource management and development alternatives, general alternative management and development strategies must be postulated. One strategy should assume no further development beyond that presently underway; that is, to maintain the status quo. Additionally, several strategies should be developed to represent a range of rates and intensities of development in the region. Possibilities might include shipping mined material out of the region for processing; mine-mouth generation of electricity with coal, gasification and on-site burning of gas, or pipeline transport of coal gas to distant use sites. Other models could concentrate on consequences of favoring surface use such as recreation and ranching, rather than mineral development. The alternative of generating power within the study area, and using it for such processes as uranium enrichment, must be considered in light both economic and environmental implications. Possible new electrical transmission methods must be considered in any model concerned with mine-mouth generation of energy.

Strategies should include not only the physical management and development of the resources of the region, but also concomitant actions that various levels of Government and industry may have to take, such as regulation, leasing or investment. All strategies or options must consider total resource management in the region. Relationships of the proposed development strategies to regional and national demand and supply projections must be analyzed. That can perhaps best be accomplished through econometric and other appropriate models.

4. Analysis of Consequences. The proposed strategies will be analyzed to determine economic, social and environmental implications locally, in the region, and nationally. These implications will be arrayed against a variety of goals and the results presented without value judgment. The multi-objective principals and standards being developed by the Water Resources Council will be reviewed and applied to the extent possible.

To perform these tasks, an array of analytic methodologies and/or models shall be identified, evaluated, and extended, or developed as needed. These models must address such diverse effects as national economic patterns, regional and State economic status and development activities (econometric models), air quality (emission and meteorological models), land use, and resource use. Modeling and regional profile inventories shall be closely coordinated, should proceed in a parallel manner, and should be carried out by the same people. In addition to detailed models of specific sectors, integration of sector models will be required. This will be a particularly delicate task, but necessary to provide a means of translating alternatives regarding limited areas into a comprehensible whole. The need to establish methods for assuring crosswalks between various models cannot be overemphasized.

This array of models, when fully developed and integrated, will themselves be a major product of the program and should be useful for resource planners in other areas, as well as planners in the study area who may need to further evaluate development proposals.

5. Final Report. Assuming resource and use inventories, analytical methodology, and interim results are published as they are developed, the final report will consolidate results and provide a readable overview of the program.

Organization and Participation

A schematic of the proposed organization is shown in Figures 2A and 2B. Policy guidance and overall direction will be provided by a high-level Program Review Board, which will have ultimate authority over the Program. Day-to-day direction will be in the hands of the Program Management Team. The Program Manager will frequently report to the Program Review Board. Other Federal agencies and State, citizen, and industrial organizations will advise the Program Review Board. Individual advisors will be designated or approved by the Review Board. Advisory Groups, as well as interested private entities may also desire to exchange information with the Program Management Team and participate in the working groups. Such participation will be encouraged to the fullest possible extent.

Implementation of the program will be the responsibility of a Program Management Team, consisting of one representative from each of the major participating agencies. The Program work will be carried out by a cross-section of full and part time staff under the overall direction of the Program Management Team.

The Program Management Team will assume direct responsibility for preparing the Program Design and Final Report. The remainder of the Program will be coordinated by three Staff Coordinators, who will report to the Program Management Team. Their areas of responsibility will be the development of the Regional Profile and of Constraints and Alternative Strategies, and the Analysis of Consequences. These three study areas will be broken up into specific tasks. Task Groups representing particular areas of expertise and drawing from various agencies will be formed to carry out the work of the program. The Groups will be of interagency composition, including expertise from the State and local levels as well as the private sector. Group leaders, selected on the basis of agency expertise in each particular subject, will form a task coordination committee reporting to the Staff Coordinators.

Specific tasks will be assigned to the individual Task Groups by the Program Management Team through the Staff Coordinators. One such Group may work on several different tasks that may form part of the programs of different Staff Coordinators.

As an example, the group developing the regional profile on air quality may also continue to identify environmental constraints under the Staff Coordinator for Constraints and Alternative Strategies. The same group, or part of it, will also analyze alternatives and develop models. This will simplify feed-back between the various Coordinator areas. In addition, modeling expertise will be maintained with the Task Groups, providing coordination with the collection of basic data.

Some tasks, particularly those developing regional profile data, may be assigned, fully or partially, to on-going State or Federal programs. As an example, one or more tasks, or a portion of several tasks, related to surface resources could be carried out by Agriculture's Surface Environment and Mining (SEAM) program, which would coordinate State, local, and Federal involvement through programs now in the planning stage. Leadership in other tasks or sub-tasks could be assigned to individuals or groups which now have key national roles, such as the collection and display of the geologic data base by the U.S. Geological Survey and the offices of various State geologists. As another example, on-going studies with EPA of national supply and demand of energy and clean fuels will likely provide information useful to specific tasks under Constraints and Strategies and under the Analysis of Alternatives.

Maximum reference to and use of on-going programs should prevent duplication of effort and speed completion of key jobs. However, full involvement of public agencies, industry, and individuals knowledgeable about a subject will be necessary.

Reports and Scheduling

A pattern of reports and scheduling is suggested by the schematic in Figure 1; the preliminary design phase would make dates and tasks more explicit. Consultation between the Program Management Team and the Program Review Board will be frequent and informal. It may be useful to schedule periodic meetings with the Program Review Board for progress reports.

The Advisory Groups should serve in effective review roles. Comments of participants can be incorporated directly in final papers, ensuring participation by all interested parties at the most opportune time.

A specially selected group of Technical Advisers will be called upon as needed to review the efforts and products of the Work Groups. The Technical Advisers shall be designated by and shall report to the Program Management Team and to the Staff Coordinators as appropriate.

In addition to periodic oral and written progress reports to the Program Review Board, the substance of the program's output will take the form of a series of staff papers, some of which will appear in both draft and final form. The series would include the program design, resource and use inventories, analytical model descriptions, studies of institutions, and interim results. A final report, as noted, would provide an overview and consolidation of efforts and results.

Personnel

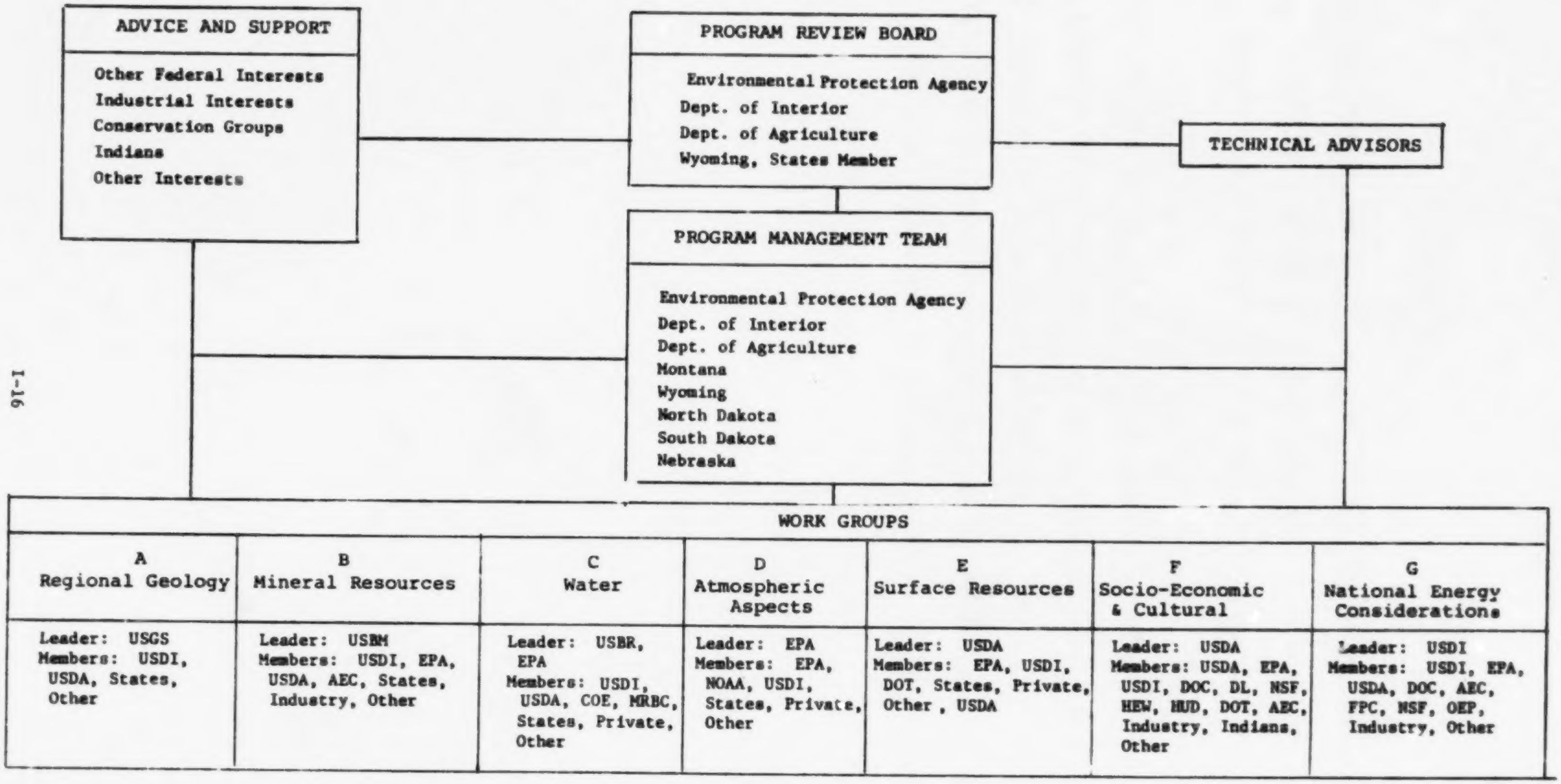
In many cases, resources can be made available by program redirection and personnel detail with little sacrifice in on-going programs.

The Program Management Team and Staff Coordinators must devote full time to the NGPRP.

It may be necessary to contract some of the modeling effort. Certain resource inventory work and impact studies may also require explicit funding. Expenditures for preparation and publication of maps and reports could be considerable. Details of requirements and potential sources of funds will be estimated as part of the preliminary design effort.

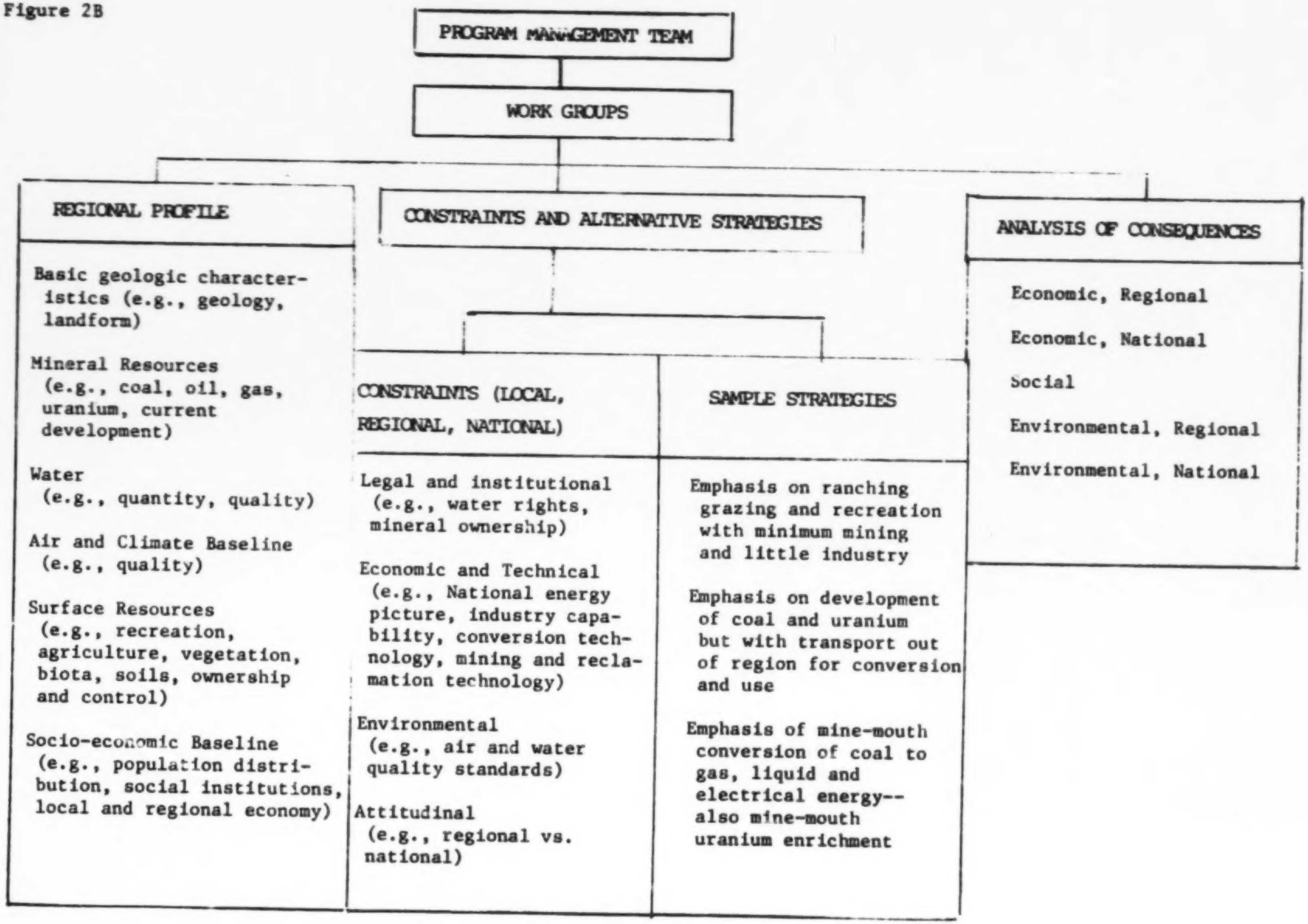
Figure 2A

NORTHERN GREAT PLAINS RESOURCE PROGRAM (NGPRP)


ADVICE AND SUPPORT
Other Federal Interests
Industrial Interests
Conservation Groups
Indians
Other Interests
PROGRAM REVIEW BOARD
Environmental Protection Agency
Dept. of Interior
Dept. of Agriculture
Wyoming, States Member
TECHNICAL ADVISORS
PROGRAM MANAGEMENT TEAM
Environmental Protection Agency
Dept. of Interior
Dept. of Agriculture
Montana
Wyoming
North Dakota
South Dakota
Nebraska
WORK GROUPS

A Regional Geology	B Mineral Resources	C Water	D Atmospheric Aspects	E Surface Resources	F Socio-Economic & Cultural	G National Energy Considerations
Leader: USGS Members: USDI, USDA, States, Other	Leader: USBM Members: USDI, EPA, USDA, AEC, States, Industry, Other	Leader: USBR, EPA Members: USDI, USDA, COE, MRBC, States, Private, Other	Leader: EPA Members: EPA, NOAA, USDI, States, Private, Other	Leader: USDA Members: EPA, USDI, DOT, States, Private, Other , USDA	Leader: USDA Members: USDA, EPA, USDI, DOC, DL, NSF, HEW, HUD, DOT, AEC, Industry, Indians, Other	Leader: USDI Members: USDI, EPA, USDA, DOC, AEC, FPC, NSF, OEP, Industry, Other

Figure 2B


PROGRAM MANAGEMENT TEAM
WORK GROUPS
REGIONAL PROFILE
Basic geologic characteristics (e.g., geology, landform)
Mineral Resources (e.g., coal, oil, gas, uranium, current development)
Water (e.g., quantity, quality)
Air and Climate Baseline (e.g., quality)
Surface Resources (e.g., recreation, agriculture, vegetation, biota, soils, ownership and control)
Socio-economic Baseline (e.g., population distribution, social institutions, local and regional economy)
CONSTRAINTS AND ALTERNATIVE STRATEGIES
CONSTRAINTS (LOCAL, REGIONAL, NATIONAL)
Legal and institutional (e.g., water rights, mineral ownership)
Economic and Technical (e.g., National energy picture, industry capability, conversion technology, mining and reclamation technology)
Environmental (e.g., air and water quality standards)
Attitudinal (e.g., regional vs. national)
SAMPLE STRATEGIES
Emphasis on ranching grazing and recreation with minimum mining and little industry
Emphasis on development of coal and uranium but with transport out of region for conversion and use
Emphasis of mine-mouth conversion of coal to gas, liquid and electrical energy--also mine-mouth uranium enrichment
ANALYSIS OF CONSEQUENCES
Economic, Regional
Economic, National
Social
Environmental, Regional
Environmental, National

APPENDIX 2

REGION VIII RECOMMENDATIONS ON PUBLIC INVOLVEMENT AND PARTICIPATION IN THE NGPRP

The Program Management Team should decide soon, the policy on information dissemination and public involvement, especially on whether a coordinated effort by the Team, or separate Agency efforts should go into information distribution.

We recommend the following actions:

1. A series of public information broadcasts and newspaper articles, especially in the Great Plains Region, to formally introduce the NGPRP. A notice that the overall NGPRP outline is available for public comment and review should be included.

2. In addition to the national environmental groups provided, we feel it is important that regional interest groups be identified and made aware of the study's imminence. Region VIII recommends that participating agencies contribute a list of potential groups that would be interested in the study, from which a master list could be made. We have included a list of regional environmental and other selected interest groups that should be contacted. The overall study outline, or a suitable description of the study criteria and goals should be sent to these groups. The groups should be able to reply as to a choice of participatory alternatives such as:

a. comment and review overall study,

b. comment on review on working drafts, and

c. comment and review on technical papers.

They could then be included on an appropriate mailing list, or arrangements could be made to include them in the work process.

3. We feel that the public meeting process is a key element for this study's success. We would strongly recommend public meetings at a number of locations in the study area at the outset, perhaps timed with the release of the overall study outline, to present for public information, the broad objectives and approaches of the study. The Program Management or even Program Review Board should perform this activity.

We also feel that the public will be interested in recommendations of this study, at task force as well as overall policy levels. Any one of these areas might require a public meeting, but at this point, it is difficult to predict which ones. We recommend that a policy be adopted to inform the public through the meetings, and perhaps in written form, of the initiation of various tasks of this program. Comments should be invited, and the public reaction would determine whether a hearing needed to be held.

APPENDIX 3

REQUESTS FOR ASSISTANCE

JOHN S. ANDERSON, M.D.
XXXXXXXXXXX
Director

State of Montana
State Department of Health
AND ENVIRONMENTAL SCIENCES
HELENA, MONTANA 59601

RECEIVED
JAN 23 1973
8125
OFFICE OF REGIONAL
ADMINISTRATOR

R8-464

January 18, 1973

John Green
Regional Administrator
Environmental Protection Agency
Suite 900, Lincoln Tower
1860 Lincoln Street
Denver, Colorado 80203

Dear Mr. Green:

expedited

In your reply of January 4, 1973, to Mr. Wake's request of December 7, 1972, you suggest what appears to us to be a considerable delay in arriving at answers to or possible answers to problems of considerable immediate importance to us.

In particular, we believe there is an urgent need for an early start on a large diffusion modeling for predicting air quality changes with the operation of a variety of coal burning or processing plants at a variety of places in the coal field area of eastern Montana. It appears to us that such modeling, while not attempted on such a scale before, is certainly possible and absolutely essential to the proper administration of any siting decisions or planning.

If it is the feeling of EPA that such diffusion modeling is not feasible or useful or that for some reason EPA cannot or will not be able to initiate or assist in such a program in the very near future, we would appreciate a verification of that position at an early date so that other avenues of approach can be examined.

While we have approached you with two urgent requests in as many days on matters of substantial magnitude, we believe the problems are important ones needing early resolution.

We appreciate your interest and support.

Sincerely,

John S. Anderson

John S. Anderson, M.D.
Director

JSA:BFW:mrc

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DEC 14 1972
7841
OFFICE OF REGIONAL
ADMINISTRATOR

R8-414

State of Montana

State Department of Health
AND ENVIRONMENTAL SCIENCES
HELENA, MONTANA 59601

JOHN S ANDERSON M D
[illegible]
Director

December 7, 1972

Mr. John A. Green
Regional Administrator
Environmental Protection Agency
Region VIII
Suite 900, 1860 Lincoln Street
Denver, Colorado 80203

Dear Mr. Green:

Thank you for your letter of December 5, 1972, concerning our request for ten hi-vol samplers. While we regret we are not able to obtain these samplers, we appreciate your substantial interest and support in obtaining other materials and services.

As you are no doubt aware, there is extraordinary interest in the coal field development problem from which we are feeling a great deal of pressure and demand for information that we cannot yet supply. To better fulfill our obligations in this area, I feel it would be highly desirable to hold a four-state meeting regarding air pollution control and water pollution control relative to the coal field development problem held under the auspices of your office. I am sure that North Dakota, South Dakota, Wyoming and Montana--those in a similar position to myself--would benefit greatly from such a meeting by coming to a better understanding of what our capabilities are and to express our needs to the EPA in a uniform manner.

I would appreciate any consideration you can give to this request or any other action you might suggest that would aid us in our planning for these two specific elements in the coal field development problem.

We appreciate your interest and support.

Sincerely,

Benjamin F. Wake

Benjamin F. Wake, Administrator
Environmental Sciences Division

BFW:dmg

THE STATE OF WYOMING

Department of Health and Social Services

Division of Health and Medical Services

STATE OFFICE BUILDING CHEYENNE, WYOMING 82001

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AUG 24 1972
EPA REGION VIII

August 23, 1972

Mr. Charles W. Murray, Jr., Director
Air and Water Quality Programs Division
EPA - Region VIII
1860 Lincoln St., Suite 900
Denver, CO 80203

Dear Mr. Murray:

We have been concerned with the present lack of air quality impact data related to the development of the Fort Union coal region of Montana, the Dakotas, and Wyoming. The matter is further complicated by a virtual absence of background air quality data in the Powder River basin area of Wyoming and long-term meteorological information applicable to this region. We see the need for an in-depth emission modeling study implemented to give information for planning regarding air quality questions of the proposed coal burning plants.

In the absence of existing emissions (except for the Wyodak plant near Gillette) we recognize that considerable effort is required to make accurate and meaningful predictions for the plant complexes mentioned for this basin. We cannot foresee the capabilities being provided within any existing Wyoming agencies, since such efforts would require disciplines and personnel qualifications which are not normally utilized in such agencies. In short, we feel that a competent adequately staffed and equipped force is a minimum requirement and anything short of this would not successfully answer these concerns.

Since this matter is only part of a large involvement with many aspects of environment, economics, and land use matters, the Wyoming Department of Economic Planning and Development has been in contact with us and generally concurs with our concerns. We feel that a coordinated effort with all such state groups is of prime importance so that the greatest benefit for the work input would ensue.

We would appreciate being able to confer with your office further in this matter and explore the possibilities of securing assistance in finding capabilities for such a study.

Very truly yours,

Robert E. Sundin

Robert E. Sundin
Director
Air Quality Section

RES:ak
cc: Norman Huey
Don Brunk, Director, DEPAD

STATE OF MONTANA

Snyder

DEPARTMENT OF STATE LANDS

STATE CAPITOL HELENA 59601 (406) 449-2074

OCT 1[illegible] 1972
7301
OFFICE OF REGIONAL ADMINISTRATOR

(Mr. [illegible] to [illegible] at this visit R8-360)

E BOARD OF
COMMISSIONERS
T H. ANDERSON
GOVERNOR
RES COLBURG
PUBLIC INSTRUCTION
NK MURRAY
ETARY OF STATE
T L. WOODAHL
RNEY GENERAL

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OCT 24 1972
EPA REGION VIII
Air and Water Programs Division

October 16, 1972

Mr. John A. Green, Regional Administrator
Environmental Protection Agency
Region VIII
Suite 900, 1860 Lincoln Street
Denver, Colorado 80203

Dear Mr. Green:

Thank you for your letter of October 4. We hope to gain much knowledge and insight from Mr. Grim's proposed visit.

You can assist us in other areas. The State of Montana has essentially no detailed information regarding trace elements present in Montana coal. Sulphur, nitrogen, radioactive elements, beryllium, nickel and heavy metals (lead, zinc, cadmium) are of particular concern.

Obviously this information is essential to a rational evaluation of air pollution problems associated with the projected production of 53,000 megawatts of coal fired electrical power. The data is also vital to consideration of the best means of disposing of the great volumes of fly ash to be produced. This issue in time will be critical to a successful mined land reclamation program. We also must know in what chemical compounds the trace elements are bonded in fly ash.

We understand that the Tennessee Valley Authority has received a twenty thousand (20,000) ton test shipment of sub-bituminous coal from the Western Energy Company's mine at Colstrip, Montana. Hopefully, TVA coal and fly ash analyses can provide detailed data heretofor unavailable to any State of Montana authorities. This information should prove quite valuable to the Region VIII Energy Task Force as well.

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Would you please use all authority and persuasion possible to obtain this information? In that the TVA is a quasi-public agency this information should be made available to other public authorities. We have not inquired directly of the TVA in that we do not know how to proceed.

I appreciate your cooperation greatly.

Sincerely,

Ted Schwinden, Commissioner
Department of State Lands

Copy to: Mr. Keith Snyder, EPA, Denver

TS/aj

Murie Audubon Society
P. O. Box 2112
Casper, Wyoming

RECEIVED
JAN 10 1973
OFFICE OF REGIONAL
ADMINISTRATOR

R8-459
8005

Dec. 19, 1972

Mr. John Greene
EPA, Region VIII
Suite 900, 1860 Lincoln Street
Denver, Colorado 80203

Dear Sir:

The Board of Directors of the Murie Audubon Society is concerned about the possible emission of harmful quantities of trace elements to the atmosphere from coal fired power plants. Recent inquiries indicate that little chemical analysis of trace metals in Wyoming coals has been done and that little data is available to predict how these elements would be transmitted to the environment.

In view of the present and projected development of power plants in this state, we feel it is imperative that a comprehensive sampling and testing program be undertaken to determine the concentration of trace elements in coal being presently used at the Dave Johnston Power Plant, and also in the coal reserves for the Jim Bridger plant.

We urge that your agency initiate this action immediately.

Respectfully,

Murie Audubon Society

Oliver K Scott
Oliver K. Scott, M.D.
President

cc: Sen. Gale McGee
Rep. Teno Roncalio
Mr. Robert Sundin

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DEC 26 '72

S & A DIVISION

1990
December 14, 1972

Thomas Hartlage,
Chief, Air Surveillance Section
Air Surveillance & Field Study Branch
Environmental Protection Agency
P.O. Box 12055
Research Triangle Park, N.C. 27711

Dear Mr. Hartlage:

The Custer National Forest has expressed a desire to establish several air quality monitoring stations. Their proposed sites are in close proximity to potential coal strip mining activities and an oil field. These sites are in Montana and North Dakota to document base air quality levels prior to development of the coal and oil fields. Such data will be the basis for guidelines and standards.

When we first contacted you by telephone, you advised us to work through EPA, Region 8, Denver. We have contacted Denver (Mr. Wm. T. Basbagill), and he requested we work directly with you but to keep R-8 informed.

We have also contacted both States to learn their plans and programs. We do not desire to duplicate their efforts but to complement them. The sites we have selected are: Ashland, Montana; Medora, North Dakota; Blue Bluffs Oil Field, North Dakota. We also suggested Dickinson, North Dakota, but the State has a high volume sampler there, serviced by the county sanitarian. We would like to supplement this station with a total oxidant, NOX and SO2 test tube sampler. At the other three stations we desire both the test tube and the high volume particulate sampler. All sites have AC power.

These stations will be serviced by Custer National Forest personnel or by cooperators on a regularly scheduled basis. Those servicing the sites will require training in sampler use. We will also need assistance in erecting these samplers. Mr. Basbagill indicated he would lend assistance. Samples will be sent to the Research Triangle for analysis. We desire data be returned to: Forest Supervisor, Custer National Forest, U.S. Forest Service, P.O. Box 2556, Billings, MT 59103. We will send the data to the State agencies.

We understand the equipment will be on loan from EPA for one year. The loan is renewable on an annual basis. We will desire this equipment for several years.

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This is a proposal. The Custer is eager and willing to begin at an early date. If your response to this is positive, we will supply more details on the specific sites and develop operating plans. We encourage you or your representative to visit each site with Forest Service representatives from the Forest Supervisor's office and from the local District office. Your recommendations will be incorporated into the operating plans.

We recommend two contacts in our Region. Initially, the primary contact is: Mr. Richard H. Wheeler, Division of Natural Resources, Forest Service, Federal Building, Missoula, Montana 59801 - Phone: FTS (406) 549-3433; Commercial (406) 549-6511, ext. 3433. Your secondary contact is: Mr. Jack Craven, Custer National Forest, U.S. Forest Service, P.O. Box 2556, Billings, Montana 59103 - Phone: FTS (406) 245-6361; Commercial (406) 245-6711, ext. 6361.

At present, Mr. Craven will become your primary contact once the Custer stations become operational.

We urge you give serious consideration to this proposal. We await your response.

Sincerely,

SHERWOOD C. TROTTER

for Wm. A. WORF
Chief, Division of Natural Resources

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APPENDIX 4

EPA'S STATUTORY RESPONSIBILITIES VIS-A-VIS THE NORTHERN GREAT PLAINS RESOURCE PROGRAM

This Accomplishment Plan has been prepared to detail the activities that EPA must take in the discharge of its statutory authority. There follows a summary of selected sections of EPA's statutes that direct the involvement detailed previously. Note that the directives of the Federal Water Pollution Control Act cover far more items than just water if those items can or do cause water pollution.

(Federal Water Pollution Control Act,
as amended, 1972)

"Section 102(a): .... in cooperation with other Federal agencies, State water pollution control agencies, and the municipalities and industries involved, prepare or develop comprehensive programs for preventing, reducing, or eliminating the pollution of the navigable waters and ground waters and improving the sanitary condition of surface and underground waters."

Excerpts: .... improvements necessary to conserve such waters ....
.... authorized to make joint investigations ....

"Section 103(a): .... shall encourage cooperative activities by States for the prevention, reduction, and elimination of pollution, encourage the enactment of improved and, so far as practicable, uniform State laws relating to the prevention, reduction, and elimination of pollution; ...."

"Section 104(a): .... shall establish national programs for the prevention, reduction, and elimination of pollution and as part of such programs shall -

"(1) ... in cooperation with other Federal, State, and local agencies, conduct and promote the coordination and acceleration of, research, investigations, experiments, training, demonstrations, surveys, and studies relating to the causes, effects, extent, prevention, reduction, and elimination of pollution;

"(2) ... encourage, cooperate with, and render technical services to pollution control agencies and other appropriate public or private agencies, institutions, and organizations, individuals, including the general public, ...

"(5) ... (in cooperation) establish, equip, and maintain a water quality surveillance system (utilizing all resources available)....

"(b) (3) make grants ....

"(4) contract with public or private agencies, ...

"(6) collect and disseminate, in cooperation with Federal departments and agencies, and with other public or private agencies, institutions, and organizations having related responsibilities, basic data on chemical, physical, and biological effects of varying water quality and other information pertaining to pollution and prevention, reduction, and elimination of pollution.

"(7) develop effective and practical processes, methods, and prototype devices for the prevention, reduction, and elimination of pollution.

"(d)(2) Improved methods and procedures to identify and measure the effects of pollutants, including those pollutants created by new technological developments ....

"(t) .... (in cooperation) conduct continuing comprehensive studies of the effects and methods of control of thermal discharges ....

"Section 105(d): .... an accelerated effort to develop, refine, and achieve practical application of:

"(1) waste management methods applicable to point and non-point sources of pollutants, ...

"(3) improved methods and procedures to identify and measure the effects of pollutants on the chemical, physical, and biological integrity of water, including those pollutants created by new technological developments.

"Section 107(a): .... projects to demonstrate comprehensive approaches to the elimination or control of acid or other mine water pollution ....

"Section 201(e): .... encourage waste treatment management which results in integrating facilities for sewage treatment and recycling with facilities to treat, dispose of, or utilize other industrial and municipal wastes ....

"(f) .... encourage waste treatment management which combines 'open space' and recreational considerations ....

"Section 301(a): Except as in compliance with this section and sections 302, 306, 307, 318, 402, and 404 of this Act, the discharge of any pollutant by any person shall be unlawful.

"Section 303(a)(1)(B): Each State shall identify those waters or parts thereof within its boundaries for which controls on thermal discharges under section 301 are not stringent enough to assure protection and propagation of a balanced indigenous population of shellfish, fish, and wildlife.

"(b) ... estimate ... total maximum daily thermal level ....

"Section 304(a)(1): ... (publish and periodically revise) criteria for water quality accurately reflecting the latest scientific knowledge (A) on the kind and extent of all identifiable effects on health and welfare ... (C) on the effects of pollutants on biological community diversity, productivity, and stability ....

"(2) ... information (A) on the factors necessary to restore and maintain the chemical, physical, and biological integrity of all navigable waters, ground waters ... (B) on the factors necessary for the protection and propagation of shellfish, fish, and wildlife ....

"(e)(2)(B) mining activities, including runoff and siltation ....

"(F) changes in the movement, flow, or circulation of any navigable waters or ground waters ....

"Section 306(b)(1)(A): ... steam electric power plants

"(B) ... Federal standards of performance ....

"Section 316: (Thermal Discharges)

"Section 402: (National Pollutant Discharge Elimination System)

(Clean Air Act 1970)

"Section 101: Federal financial assistance and leadership is essential for the development of cooperative Federal, State, regional, and local programs to prevent and control air pollution."

"Section 103(a): The Administrator shall establish a national research and development program ... part of such program shall ... conduct investigations and research and make surveys concerning any specific problem of air pollution in cooperation with any air pollution control agency with a view to recommending a solution to such problem ...."

"Section 103(b): In carrying out the provisions of 103(a) the Administrator is authorized to: (a) 'cooperate with other Federal departments and agencies, with other public and private agencies, institutions, and organizations, and with any industries involved, in the preparation and conduct of such research and other activities,' (b) 'develop effective and practical ... methods ... for prevention or control of air pollution."

(National Environmental Policy Act)

"Section 2:	... to promote efforts which will prevent or eliminate damage to the environment and biosphere and stimulate the health and welfare of man ...."
"Section 101(a):	The Congress ... declares that it is the continuing policy of the Federal Government, in cooperation with State and local governments, and other concerned public and private organizations, to use all practicable means and measures, including financial and technical assistance, in a manner calculated to foster and promote the general welfare, to create and maintain conditions under which man and nature can exist in productive harmony, and fulfill the social, economic, and other requirements of present and future generations of Americans."
"Section 101(b):	... it is the continuing responsibility of the Federal Government to use all practical means ... to improve and coordinate Federal plans, functions, programs, and resources to the end that the Nation may ...

(2) assure for all Americans safe, healthful, productive, and esthetically and culturally pleasing surroundings;

(3) attain the widest range of beneficial uses of the environment without degradation, risk to health or safety, or other undesirable and unintended consequences;

(4) preserve important historic, cultural, and natural aspects of our national heritage, and maintain, wherever possible, an environment which supports diversity and variety of individual choice;

(5) achieve a balance between population and resource use which will permit high standards of living and a wide sharing of life's amenities, ..."

"Section 102: ... all agencies of the Federal Government shall

(A) utilize a systematic, interdisciplinary approach which will insure the integrated use of the natural and social sciences and the environmental design arts in planning and decision making which may have impact on man's environment;

(B) identify and develop methods and procedures ... which will insure that presently unquantified environmental amenities and values may be given appropriate consideration in decision making along with economic and technical considerations;

(D) study, develop and describe appropriate alternatives to recommended courses of action in any proposal which involves unresolved conflicts concerning alternative uses of available resources ....

(F) make available to States, counties, municipalities, institutions, and individuals, advice and information useful in restoring, maintaining, and enhancing the quality of the environment;

(G) initiate and utilize ecological information in the planning and development of resource-oriented projects; ...."